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a quarterly journal of
PLANNING, HOUSING & PUBLIC UTILITIES

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The Place of Agriculture in Economic Development†

By YUSIF A. SAYIGH*

The Shift in Outlook

TO MOST economic writers and students of economics, and more so to journalists and other molders of public opinion clamoring for economic development in the less developed world in the early postwar years, development meant industrialization, almost by definition. It also meant, by implication if not explicitly, the relegation of the agricultural sector in the economy to a minor position and the direction of effort and resources largely to industry.

Today there is, to say the least, serious doubt concerning the near-complete identification of economic development with large-scale industrialization, in spite of the great emphasis still placed on the evolving of the manufacturing industry. The more daring students of the subject are willing to go as far as to say that the agricultural sector ought to have the place of honor in the economy and in the

designing and process of development. The shift in attitude may not be widely shared outside the ranks of specialists but its extent among them and among a smaller circle of policy-makers is significant enough to deserve attention.

Those students and policy-makers who identified development with industrialization almost without question had certain views on underdevelopment in which cause and effect were rather confused. Thus, from the generally correct observation that, in most countries with low levels of income per capita, agricultural activity predominated among economic activities they usually moved to the conclusion that it was this predominance that depressed incomes.

That this conclusion did not rest on anything more convincing than guesswork can be seen if we remember that only recently have a few thorough and comprehensive studies been undertaken to explore the relationships between the various economic sectors during a process of growth or at different points in time. Among these, Simon Kuznets of The Johns Hopkins University has studied data covering a number of decades and for 59 countries in order to determine,

† The material on which this article is based was originally prepared for and given as an address at the Near East and South Asia Regional Conference of Food and Agriculture Officers of the International Cooperation Administration held in Beirut, April 1959.

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even if tentatively and only partially in some instances, the quantitative aspects of the economic growth of nations, the industrial distribution of national product and labor force, and how this distribution behaves over time under conditions of growth.¹ Without going into the findings of Prof. Kuznets we can still say that both statistical evidence and qualitative analysis point to the view that agricultural backwardness is not so much a *cause* of general underdevelopment as a *result* of it and that a state of development measured, say, by the level of real income per capita, is conceivable and possible in an economy that is predominantly agricultural. We can safely say further that no worthwhile development can proceed in the other sectors of the economy before agriculture itself has been freed to a considerable extent of its backwardness.

The confusion between cause and effect to which we have just referred must not all be blamed on the layman. A part of it has arisen because of the interpretation to which some of the literature on economic progress has lent itself. I am referring here to some theories put forward in the inter-war period according to which societies follow a course of progress with well defined stages. These stages have been variously designated as agriculture, manufacturing industry, and services—or primary, secondary, and tertiary.² This sequence has been widely taken to reflect a ranking in terms of importance of the stages in the process of development. As a result, it has come

to be desired, especially by economic planners, to run away from the agricultural stage as soon as possible. Obsession with industrialization, as a desideratum in itself, has blinded many an otherwise responsible and rational person to the high human and material cost, or to the illogicality of what I call "insulated industrialization." In what sense industrialization can be insulated and the dangers and remedies of such insulation will I hope become clear later on.

Having pointed to the confusion arising from the old look of the phasing and causation of economic development, I must now in fairness point, even if briefly, to the understandable obsession of underdeveloped countries with the manufacturing industry and as a result to the enormous attention and effort devoted to the process of industrialization. There are two good reasons for this obsession. The first is the educational value inherent in the training and organization and in the technological preparation necessitated by industrialization. The second is the rise in productivity, and therefore in income, of participants in industrial activity on moving over from agricultural activity. Present-day willingness to allow agriculture to share the place of honor with industry in the design of development is a sign of the acceptance of certain important qualifications to the case for industrialization. These qualifications result from a clear realization of the necessity of viewing the whole economy as a unity within which major sectors cannot be developed if other major sectors are ignored and within which sectors cannot progress at very different paces.

The Conditions of Development

To my mind, to find the proper place of agriculture in economic development one must first of all *not* think in terms of strategic positions relative to the process

¹ Simon Kuznets, "Quantitative Aspects of the Economic Growth of Nations", I, II and III, *Economic Development and Cultural Change* (Chicago, Illinois: University of Chicago Press, Vol. V, No. 1, October 1956) Supplement to Vol. V, No. 4, July 1957; and Vol. VI, No. 4, Part II, July 1958, respectively.

² As, for example, Colin Clark in *Conditions of Economic Progress*, and A. G. B. Fisher, "The Economic Implications of Material Progress," *International Labour Review*, July 1935, pp. 5-18. Harvey Leibenstein gives at least partial support to the Fisher-Clark thesis in his *Economic Backwardness and Economic Growth* (New York: John Wiley, & Company, 1957), esp. pp. 77-79.

of development within the whole system of dynamic relationships in society. In other words, one must start with no preconceived ideas of the superiority of certain sectors. One must start instead with a desire to find out the most effective and practicable way of reaching whatever objectives one has decided upon; then one must determine the areas of social and economic change that have to be conquered before the objectives can be reached.

I have to stop at this point and define some of my terms in order better to convey the substance of my argument. My insistence on social change in a zone wider than the one conventionally and narrowly economic arises from the differentiation I make between growth and development, in line with a small group of scholars such as Joseph Schumpeter and James Baster.³ Here growth is simply a modest rise in real income per capita which a society is capable of achieving solely through the normal exertions of the economy as a going concern and from within the economic framework proper: whereupon development becomes growth of a size that cannot be achieved without a much greater exertion and without the simultaneous or even the prior occurrence of radical changes in certain cultural, social, political, and technological institutions and ideas.

There is, however, need for something beyond this differentiation, important as it is, between growth and development. Three conditions have to be satisfied before we can concede that development is taking place. *First*, the marked departure from an habitual, modest rate of growth must endure and not be merely a spurt of brief duration. *Second*, the

marked rise in the rate of growth must be largely the result of the performance of the national economy itself and not of sizable pockets of foreign enterprise in it, such as the oil industry in the Middle East. *Third*, this marked, sustained rise in income must be accompanied by an improvement in the pattern of income distribution, or at least must not be accompanied by a worsening of this pattern for more than a short period of time.⁴

These conditions, although perhaps obvious, are nonetheless very important. A moment's thought about them confirms the truism of the absolute necessity of the underlying requirement that certain radical socio-economic and technological changes should occur before a society can set out unmistakably on the path of development. Only if this basic requirement and the three conditions that project or explain it are adequately satisfied will it be possible to witness what Rostow has called the "take-off" into economic development with all that this implies in the overcoming of rigidities and problems inside the economy proper, and outside of it in the social and cultural systems as in the realm of technology.⁵ But what is more important than the mere "take-off" into development is the sustenance of development within a framework of social justice and it is here that the requirement and the conditions are most relevant.

No marked advances in any one large sector in the economy are possible within this conceptual frame while another large sector lags behind. Nor will it be advisable to concentrate attention on the promotion of one sector, such as industry, in terms of technical advancement and

³ See Joseph A. Schumpeter, *The Theory of Economic Development* (Cambridge, Massachusetts: Harvard University Press, 1934), pp. 63 and 64; and James Baster, "Recent Literature on the Economic Development of Backward Areas," *Quarterly Journal of Economics*, November 1954, pp. 585-602.

⁴ The writer has developed these conditions at length in, *Entrepreneurship and Development: Private, Public and Joint Enterprise in Underdeveloped Countries*, Chapter I (Ph. D. Dissertation, The Johns Hopkins University, 1957. Unpublished.)

⁵ W. W. Rostow, *The Process of Economic Growth*, (New York: W. W. Norton & Company, 1952). p. 19.

rise in productivity and income if the rest of the economy has not first gone through the painful changes and adjustments that will permit the growth of that one sector as well as the rest of the economy. Ignoring the rest will inevitably drag the one advanced sector more or less back to the level of the other sectors, will make the cost of its promotion exorbitant, or will otherwise negate the gains—even if only partial—of that sector.

These generalizations make more sense in a discussion of specifics. But even at the present level of abstraction it can be seen that the task of development is so enormous and exacting, and the process so complex and penetrating that one is not allowed to over-simplify matters either by phasing development in a hierarchy of stages or by manipulating development at one moment of time through promoting one sector and holding the other sectors constant. Both the phasing and the manipulation are not true to life: at best they are useful only for partial analysis, not policy purposes—and even then strictly within a narrow economic context. But we know that we need a much broader context than the mere economic for understanding and planning development. Therefore an artificial narrowing of the context is bound to mislead those who impose it as much as those who accept to think and operate within it.

Agriculture and Development

The Overpopulated Country. Thinking about the place of agriculture in economic development necessitates a broad differentiation between those underdeveloped countries that are considered overpopulated, and those that are considered underpopulated—given the technology prevailing in either case. The differentiation has usually been made in

order to indicate the dissimilarity of the problems, and therefore the dissimilarity of solutions for the problems of the two categories of countries.

In the first category of overpopulated, underdeveloped countries, the major problem is how to siphon off excess, underemployed population from the countryside and to provide it with gainful employment. Overpopulation in the circumstances, coupled with ignorance, general poverty, and often illness results in low productivity and a low real income per capita. If manufacturing industry could only be established, the argument runs, underemployed laborers would be drawn into industry without adversely affecting agricultural production and with benefit to industrial production. These are the bare bones of the argument. It is often made more complete and elaborate by references to the psychological value of providing gainful employment to the excess rural population which is thus saved from the demoralization of forced idleness. The learning of new skills by rural workers, the introduction of new products into the stream of national income, the raising of the performance of the economy, the introduction of the new forms of organization and of complex technology required in manufacturing, and the emergence of certain institutions such as industrial banks and research institutions made necessary by industrialization—all are important results of the shift that are often, and quite rightly, cited.

On the other hand, the argument continues, countries that are underpopulated or just optimally populated do not present the same sense of urgency for industrialization, yet will have to make the decision sooner or later if they are to face their high rate of increase in population. And, as in the case of overpopulated countries, arguments of economic and non-

economic aspects are offered, such as the need to be freed of the serious dependence on the exportation of foodstuff and primary commodities, the need to diversify production, and the need to be relatively independent of foreign exporting countries. Furthermore, the psychological, technological, and organizational benefits of industrialization to which I have just referred in connection with overpopulated countries apply equally here to underpopulated countries.

I do not claim that these arguments are fundamentally false. What I do claim is that they overlook for the most part the logical sequence of events in the process of development, and quite often they confuse the chain of causation in this process. But most important, they have too narrow a focus within the broad context of society. Let us take the case of the overpopulated country first. The ills of this type of country are too well known to need elaboration. Yet because of these very ills it would be idle to suppose that industrialization is a short-cut to development and prosperity. If the population is needy, weak, illiterate and unprepared except for its traditional activity—as it is most likely to be—then it will resist change and will show excessive immobility, both in the geographical sense and in the sense of attitude. Such a population will be traditionalist and will shy away from the unknown: its stock of knowledge, both pure and applied, will be very limited; its social structure will be tight and unwelcoming to the new relationships that are bound to come with organization and industrialization; industrial skills will involve a radical departure from the pattern of its present skills; the institutions prevailing, including both the economic and the sociopolitical, will be of the type that has evolved within the context of a predominantly agricultural economy; and

the motivation and value systems will not be conducive to easy or speedy industrialization.

The objection might arise that all these shortcomings and ills, while true, are a challenge that has to be faced, that an underdeveloped economy ought sooner or later to remedy these ills, and the sooner the better if the cumulative effect of extreme underdevelopment is not to paralyze the initiative for progress. To my mind the best answer to this objection would be to affirm the enormous challenge of rural backwardness and the crying need to face it. If agriculture is to provide the understructure for further development, as it ought to do if the population is to be adequately fed and clothed and sheltered, then not only the technology of agriculture but also its organization and the land tenure systems underlying it and the institutions financing and servicing it, will need to be extensively improved. And the improvement will call for a change in social relations, attitudes, and motivation in the rural community. This is no easy job for an overpopulated, poor country. But at least it does not call for any serious uprooting of people and habits nor will it cause as much dislocation as is caused in conditions of industrialization.

There is yet more to be said for the course of action we are favoring. Agricultural development must come first if the economy is to cease being a subsistence economy and to become a market economy. Manufacturing industry for many years in its early life will not be competitive in the international markets and will have to rely mainly on the local market. This local market is bound mostly to be the rural community. And unless this community has something to exchange for the manufactured products forthcoming from the industrial sector this latter sector is not going to be healthy

and viable. It will be wasteful of scarce resources to invest heavily in a sector the prosperity of which requires prior investment in another sector when this one is left undeveloped. And it will be unfair to do that when in all likelihood it will be exports from the underprivileged agricultural sector that go to pay for the capital equipment needed in the privileged industrial sector.

Development of agriculture is thus the logical and necessary starting point for general development. It is logical because any other starting point is bound to distort the course of development and to fail to lead to the targets of that course. It is necessary both for providing the industrial sector in due course with the foreign exchange resources to finance its capital acquisitions and for providing that sector with a local market for its products. Furthermore, once on the road to development, the agricultural sector will provide the industrial sector more easily and effectively with large parts of its labor force and its inputs. And the transition from underdeveloped to developed agriculture will have assisted the emergence of many economic and non-economic institutions which will make the further emergence of institutions, aptitudes, and attitudes appropriate for industrial development more practicable as well as less exacting and dislocating.

Above all, the major bottlenecks and lags in the course of progress arise in the traditionalism and stagnation in the rural community. It is futile to try to inject dynamism into society through the speedy evolving of an industrial sector while agriculture remains stagnant. Deep progress cannot be achieved on both these broad fronts simultaneously. If so, then the current of change must first be directed to the area where resistance is likely to be greatest and most retarding.

If the current is directed to another area to the neglect of the first, then society will be left with the paralyzing inertia of traditionalism that will nullify progressive efforts in peripheral and distant areas. To follow a course of action that does not involve primary and major emphasis on reform in the rural sector at large but on the evolving of an industrial sector means the treatment of industry out of context—what we called earlier the insulation of the industrial sector. Such insulation deprives it of the beneficial interaction, both economic and non-economic, with the rest of the economy and with the total social complex.

The economic arithmetic of costs and benefits is incomplete if not supplemented by the social and political arithmetic of the situation. Thus the restlessness and need of the peasantry place a heavy claim on the attention and resources of society—a claim that is both urgent and direct. The peasantry cannot in fairness be quieted down with the promise that it will benefit from a program of industrialization—even if the promise were honestly made and seriously intended. The benefits it expects from development must be purposely and directly designed for it. The fact that revolts have rarely erupted in rural communities contains a deceptive and short-sighted assurance. And planners ought to know that, in claiming a major share of the benefits of development, the rural community asks for justice and not charity.

There remains one point with regard to the argument that quick industrialization is the answer to overpopulation. The argument rests on the grounds that the cost-return calculus has to be relaxed in view of the urgency of the problem of explosive overpopulation. On the basis of this same argument we maintain that to place major stress on speedy industrial-

ization at the expense of agricultural reform may make the problem of overpopulation even more explosive. It is imperative to remember that industry in an economy in the early phase of its development can absorb only a very small part of the labor force. Thus a deceptive satisfaction will creep into the minds of responsible men in public office that the proper and adequate remedy to overpopulation is being administered, while in fact the ill remains virtually as serious. Furthermore, the inherent weakness of insulated industrialization, which in all probability will make it fail in reaching even its own limited and partial objectives, will have a frustrating effect on all sectors and this will only add to the explosiveness of the problem. The Malthusian terror is indeed a dragon with seven heads and it will not disappear from the underdeveloped, overpopulated world if we aim our blows at the tail.

Perhaps economists should therefore think less of siphoning off excess rural population and more of using this excess more fully and productively where it is as a prerequisite for development in non-agricultural sectors. There is possibly little glamour in a campaign to grow more food—at least it is less glamorous than a campaign to industrialize; yet there is a great deal of earthy sense in filling the stomachs of hungry peasants. Indeed, I presume there is little sense in any other campaign. But this means precisely the irrelevance of a large part of the pressure to siphon off excess population from the land since the excess will get smaller if it is used to turn out more produce. Now I admit that my thesis has little applicability to the Egyptian case but then Egypt is a very special case. India, whose population problem has the appearance of that of Egypt, is in effect in a different position. Indeed, its resource-man ratio, even

given present technology, is well higher than the Egyptian. India does not have the already highly intensive use of water and land resources which makes the Egyptian situation as desperate as it is.

But then if my thesis is of little value to the Egyptian case this does not mean that the recent ambitious program of industrialization provides the answer to the country's enormous population problem. Indeed, the reasoning underlying the Aswan Dam approach to the problem itself supports my point. Under the circumstances, one is left with the inevitable conclusion that the answer to Egypt's problem in the foreseeable future will be only partly in industrialization. To a larger extent it will still be in land reclamation and broad rural reform; and to a much larger extent it will have to be in restraints on population growth. Apart from the special case of Egypt, I maintain that my thesis is generally tenable.

The Underpopulated Country. So much for overpopulated, underdeveloped countries. Is the same approach valid for underpopulated, underdeveloped countries? My answer is in the affirmative. Indeed, there is at least as much reason for development efforts to be directed first to the rural sector in underpopulated as in overpopulated countries. Such efforts will be more fruitful and less exacting, in view of the more accommodating resource endowment in underpopulated countries.

It may well be that the process of agricultural development will lead more speedily and with less social and economic dislocation to industrial development. But the starting point in such countries is nonetheless the agricultural sector. Under the circumstances the process of development will most probably be less costly, other things equal, than in a situation characterized

by a niggardly endowment of resources. True, there will nonetheless be need for the emergence of the institutions, aptitudes, and motivations appropriate for rural development. But the growing pains associated with such emergence will not be compounded with the same painful scarcity of resources that bedevils the country having a niggardly endowment. Countries fortunate enough to be underpopulated, such as Syria and Iraq, are spared the insecurity and the anxiety that burden the overpopulated. Other things equal, the good agricultural prospects of underpopulated, generously-endowed countries will make for a smooth and rewarding advance towards industrial development.

*Insulated Sectoral Development
versus General Development*

I do not want to leave the impression with you that I argue against insulated industrial development but not against insulated agricultural development. In the first place, I am fully aware of the disapproval of underdeveloped countries of any criticism of speedy industrialization. If only for this reason the student of economic development is called upon to explore the public mind and sentiment that produces the cause for the disapproval. And the student must therefore start with the assumption that there cannot but be some strength in the case for speedy industrialization as a desired goal.

In the second place, to be consistent with myself I must state clearly that agricultural development, designed as an end in itself within the rural sector as an autonomous closed economy, makes almost as little sense as insulated industrial development. I say "almost" because insulated agricultural development is likely to be more viable than insulated industrial development, since the rural

sector can at least produce the necessities of subsistence for the community.

The developing of the agricultural sector, in the broader sense of the term with its economic, technological, organizational, and social connotations, is the condition for development of the economy at large. Only if the frontiers of the agricultural sector are left open for interaction with the other sectors will there be the inter-sector mobility and mutual accommodation vital for general development. Thus, neither the design and planning of development, nor the allocation of resources, must be allowed to be too closely geared to agricultural development in isolation any more than to industrial development in isolation. The eventual fusion of the two must remain a guiding principle in the thinking and the planning of policymakers and their advisors. This insistence does not mean, however, that there will be two starting points on the agricultural and industrial fronts simultaneously. I have argued to the contrary. But to take the position that the starting point is agricultural reform is not to say that agricultural reform must be considered self-sufficient. Indeed it must be so designed as not to be self-sufficient but to be complementary to, and to expect complementarity from, the industrial sector. The frontiers must dovetail.

This thesis is and yet is not one of balanced growth, depending on how one defines the term. If by balance one understands *ultimate* balance in the opportunities for development among the sectors, then indeed I am making a plea for balanced growth. But if by balance one understands a mechanistic apportioning of the resources available for development even in the early stages of the process regardless of the outcome in terms of possible subsequent imbalance,

then I make no plea for that type of balanced growth.

Conclusion

My conclusion is that agriculture has to be reinstated in a position of significance in the strategic arrangement of the sectors for development. In this position it is not merely a gateway from which the road to development begins, only to proceed to the blissful realm of industrialization. Agricultural development is a gateway but it is more than that. It is

an interim objective which must be adequately achieved and the results of which—in products and aptitudes and institutions—must be carried forward to be made use of in the next objective of industrial development. To my mind, this all important gateway is the only opening to development in the other sectors beyond. No satisfying breakthrough is possible elsewhere and no shortcuts that I know of lead to real industrial development while leaving a backward rural sector behind.

A Critique of Contemporary Planning for Business Centers

By BRIAN J. L. BERRY*

IN a recent article appearing in *Land Economics* Milton C. Taylor evaluated public policies that forbid provision of service facilities on limited-access highways.¹ A conflict was noted between such policies and the public interest, because "the whole weight of judgment and experience of toll highway authorities supports the conclusion that services on the roadside of limited-access highways are an indispensable requirement of the highway user."² Taylor admitted that "no quantitative data have been provided . . . which would either prove or disprove a case for services on the roadside."³

This article, like that of Taylor, argues that a conflict exists between public policies and the public interest. The case in point is a discrepancy between current planning and zoning for business centers within cities and an optimum business structure in terms of demands, economic trends, and design criteria. In contrast to Taylor's article, quantitative materials form the basis for the argument. These materials also tend to support Taylor's case for highway-oriented services.

The discussion has four parts: a summary of recent studies which have clarified the pattern of business land use; a review of information regarding the way in which this pattern of land use is changing; an analysis of planning concepts and zoning practice in light of previous parts of the discussion; a resumé of

implications for planning and zoning of business centers.

Findings of Recent Studies

Studies of urban business⁴ have been completed recently by the author and others during one phase of an investigation of the role of highways in the geographic organization of economic life.⁵ Details of these studies are published elsewhere⁶ and need not be repeated here. The findings which are of interest concern the location habits of various types of urban business and in particular that within cities there are four basic groups of business types: nucleated, urban arterial, highway-oriented, and localized. Each group comprises a set of business types defined on the basis of spatial association and location.⁷ The groups were obtained by statistical analysis working via correlation matrices and cluster search methods, without *a priori* judgments as to the association of business types.

Nucleated Types. Nucleated business types are those normally associated with central places or shopping centers: food, drug, variety, clothing, shoe, and department stores, barber and beauty shops, banks, professional offices, and so forth.

* Urban business here refers only to retail and service activities, and should be interpreted in this sense only in the rest of this discussion.

¹ William L. Garrison, Brian J. L. Berry, Duane F. Marble, John D. Nystuen, and Richard L. Morrill, *Studies of Highway Development and Geographic Change* (Seattle: University of Washington Press, 1959); Brian J. L. Berry, "Ribbon Developments in the Urban Business Pattern," *Annals, Association of American Geographers*, June 1959, pp. 145-155.

² *Ibid.*

³ A detailed description of the four groups of business types with information concerning the business types within each group and examples of the kinds of business centers associated with the groups are included in the works cited heretofore, *ibid.*

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¹ Milton C. Taylor, "Service on Limited-Access Highways: Organized Pressures and the Public Interest," *Land Economics*, February 1959, pp. 24-34.

² *Ibid.*, p. 31.

³ *Ibid.*, p. 27.

They occur in the familiar hierarchy of business centers and trade areas, from the lowest level of ubiquitous general stores, through neighborhood or village centers and community or town centers, to the level of regional shopping centers and city level central business districts. Features of this hierarchy are well known. Trade areas of low order centers "nest" within the trade areas of high order centers. All centers compete to provide low order goods and services but lower order trade areas depend upon the high order centers for high order goods. The concepts of "range" and "threshold" have been shown to provide a satisfactory explanation of the spatial and hierarchical characteristics assumed by this nucleated group.⁸

Urban Arterial Types. Urban arterial business types locate only in cities, and within cities seek sites along major traffic arteries rather than in nucleated centers. They include furniture, appliance, and fuel dealers, bars, and automobile repair establishments. In association they contribute to familiar ribbon developments. It has been asserted elsewhere that these urban arterial business types constitute the fringe, secondary belt, or frame, of nucleated centers.⁹ This is probably true in proximity to a central business district, for in such a case printing and office supply concerns tend to concentrate in the better arterial locations while less desirable arterial properties in the zone of discard have skid row developments. But in other parts of the city urban arterial business types exhibit inertial characteristics with respect to

major highways rather than to nucleated centers.¹⁰

Highway-Oriented Types. Gas stations, restaurants, motels, etc., are oriented to highway demands, wherever there is justification in traffic volumes. Good highways also provide access to large cheap sites; and these sites attract lumber yards, building supply establishments, and many repair services. Together, the business types supplying highway demands and the concerns requiring both good access and space constitute the highway-oriented group. The group differs from the urban arterial group in that they are highway-oriented regardless of whether the highway is a city arterial or an intercity route.

Localized Business Types. Certain business types are found localized in specialized districts rather than dispersed throughout the urban area in many business centers. The most common of these districts is automobile row, with its dealers in new and used automobiles. Other such districts may be found in large cities.

The Pattern of Business. There are four groups of business types. With each group is associated a particular type of business district: a hierarchy of nucleated centers, ribbons of urban arterial and highway oriented types, and specialized functional areas. Viewed together, these elements constitute the urban business pattern.¹¹

Evidence Concerning Change

This urban business pattern may be found in cities throughout the United States. Does it, then, constitute a competitive locational equilibrium resulting from the natural selection of businesses on the basis of location and efficiency? Can

⁸ Brian J. L. Berry and William L. Garrison, "Recent Developments of Central Place Theory," *Papers and Proceedings, Regional Science Association*, 1958, pp. 107-120.

⁹ Ronald R. Royce and Edgar M. Horwood, *Northgate versus Certain Competitors: A Study of Shopping Center Differentiation* (unpublished report, University of Washington libraries, 1957); and *Studies of Central Business District and Urban Freeway Development* (Seattle: University of Washington Press, in press).

¹⁰ See the graphics in "Ribbon Developments in the Urban Business Pattern," *op. cit.*

¹¹ *Ibid.*, for a further discussion of the urban business pattern.

this urban business pattern be viewed as an optimum locational system? If some intrinsic quality may be inferred, then important conclusions may be made concerning the nature and quality of planning and zoning for business.

There is good evidence that retail and service business is highly competitive and that rates of birth and death are high.¹² Successful firms are those which satisfy the requirements of the economic system by being able to compete.¹³ Firms which are not competitive can persist for a while but fail in the long run.¹⁴ A business pattern viewed at any one time will contain both weaklings and more stable persistent establishments. Because of the weaklings, care is needed in inferring efficiency after viewing a pattern at a single time period. Evidence is also needed that as conditions change the retail and service economy adjusts itself by competition but that the four groups of business types persist. If evidence of persistence is found, there are more substantive bases for arguing that the urban business pattern is an optimum pattern.

Highway Impact Evidence. Many studies of the impact of highway construction upon the geographic organization of economic life are at present being undertaken, sponsored by state Departments of Highways and the United States Bureau of Public Roads.¹⁵ These studies provide evidence concerning changing business

patterns. Many have been concerned with the effects of bypass construction upon sales volumes in bypassed communities. One such study was undertaken in Marysville, a small town north of Seattle, Washington.¹⁶ Changes observed were: because traffic was diverted around Marysville, sales volumes of highway-oriented businesses declined; because congestion was reduced, Marysville became more attractive as a neighborhood center; since access around Marysville, south to Everett and Seattle, was improved, Marysville became a less competitive and desirable community-level center. From this evidence two general effects were suggested: (a) diversion of demands for highway-oriented facilities from the old to the new highway; (b) a substitution effect such that nucleated facilities centralized in higher order centers as these centers became more accessible and hence more competitive vis-à-vis lower order centers.

Information from other sources tends to confirm these two general effects. Taylor quotes a study by the Ohio Turnpike Commission concerning demands for gas, food, and rest, on new highways.¹⁷ The success of highway service plazas on the toll roads is not questioned and new

(Seattle: Highway Economic Studies, University of Washington, 1958) contains a review of many of these highway studies. Also see Garrison, Berry, *et al.*, *op. cit.*, and Boyce and Horwood, *op. cit.*

¹² Garrison and Marts, *Geographic Impact of Highway Improvement* (Seattle: Highway Economic Studies, University of Washington, 1958) and Garrison, Berry, *et al.*, *op. cit.*

¹³ "Service on Limited-Access Highways . . .," *op. cit.*, namely: (a) on the average trip of 70-90 miles on the Ohio Turnpike about half the motorists stopped at franchised plazas, and on trips of over 200 miles practically all cars stopped; (b) of the cars stopping at plazas on the average trip 34 percent bought food, 28 percent used restrooms, and 21 percent bought gasoline. Only 3 percent stopped for other purposes; (c) on trips up to 200 miles 75 percent of the motorists who stopped bought food, and as the length of trip increased the proportion buying gas increased; (d) few motorists left the turnpike, for on trips of up to 225 miles only 2.5 percent left for lodging, 1.5 percent for fuel, and 0.8 percent for food. Quoted from Ohio Department of Highways, *Use of Facilities on Limited-Access Highways*, a survey in cooperation with the Ohio Turnpike Commission, 1957.

¹² Sidney Goldstein and Kurt Mayer, "Patterns of Business Growth and Survival," *The Journal of Economic History*, 1957, pp. 193-206.

¹³ This statement does not preclude imperfect competition in the spatial system. For elaboration of this point see the discussion of excess profits in, Brian J. L. Berry and William L. Garrison, "A Note on Central Place Theory and the Range of a Good," *Economic Geography*, October 1958, pp. 304-311. Success means the ability to earn normal profits and such excess profits as are possible in the spatial system and therefore the ability to survive.

¹⁴ Goldstein and Mayer, *op. cit.*, showed that in their study area 20-25 percent of all grocers, clothing stores, gas stations, cleaners, and beauty shops, for example, survived for less than two years in the period 1940-1950.

¹⁵ William L. Garrison and Marion E. Marts, *Influence of Highway Improvements of Urban Land: A Graphic Summary*

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highway intersections are supporting significant new strips of highway-oriented business.¹⁸ Similarly, Morrill¹⁹ and Hoffmann²⁰ have noted the tendency for centralization of nucleated facilities as circulation becomes more fluid. Evidence of the increasing scale of retailing and of increasing conditions of entry suggests complementary trends.²¹

Planned Shopping Centers. It is not necessary to dwell upon the reasons for the rapid postwar development of planned shopping centers in the United States. Suffice to say that opportunities existed and the economy adjusted. Hoyt notes that since 1949 at least 50 large regional centers, 150 community centers, and perhaps 2,000 smaller centers have been constructed.²² He also points out that a saturation point (or equilibrium) has been reached such that further development is possible only if very careful planning is undertaken and then only as new markets develop.

What relationship do these planned centers bear to the urban business pattern described above? J. Ross McKeever writes: "As the shopping center has evolved three distinct types have emerged, each definite in its own function . . . the neighborhood center . . . the community center . . . the regional center."²³ The literature evidences a great deal of disagreement concerning what should be the ideally planned

neighborhood, community, and regional center.²⁴ However, as shopping centers have developed they have come to differ only slightly from unplanned nucleated centers in terms of business structure. This suggests that the rapid growth of planned shopping centers took place to offset an imbalance between nucleated facilities and expanding urban markets. Readjustment has taken account of the trend towards increasing centralization of nucleated facilities²⁵ and few sub-neighborhood nucleations have been built. Planned shopping centers are far better designed than those nucleations which, like Topsy, just grew, but differences in design should not be allowed to disguise the functional similarity of planned and unplanned nucleations.

Changes and Trends. The urban business pattern is apparently viable. Highway demands call for highway-oriented facilities; nucleations develop wherever justified, although with a trend for centralization and increasing scale. In short, the evidence suggests that the urban business pattern is a "successful" pattern which may be viewed as a competitive locational equilibrium.

Planning Concepts and Zoning Practice

How well do planners recognize and use the urban business pattern? To

¹⁸ Storrs Agricultural Experiment Station, *The Economic and Social Effects of the Connecticut Turnpike on Eastern Connecticut* (College of Agriculture, University of Connecticut, 1958).

¹⁹ Garrison, Berry, et. al., *op. cit.*

²⁰ R. Hoffmann, "Autobahn und Raumordnung," *Raum und Verkehr* (Hannover: Germany, Akademie für Raumforschung und Landesplanung, 1957) pp. 171-195.

²¹ Homer Hoyt, *A Re-Examination of the Shopping Center Market*, Urban Land Institute Technical Bulletin No. 33, Washington, D. C., 1958; J. Ross McKeever, *Shopping Centers Re-Studied*, Urban Land Institute Technical Bulletin No. 30, Washington, D. C., 1957.

²² Hoyt, *op. cit.*

²³ McKeever, *op. cit.*, p. 9.

²⁴ Compare the definitions in McKeever, *ibid.*, and in G. Baker and B. Funaro, *Shopping Centers* (New York: Reinhold & Co., 1951); Community Builders' Council, *Community Builders' Handbook*, Urban Land Institute, Washington, D. C., 1948; V. Gruen and L. P. Smith, "Shopping Centers," *Progressive Architecture*, 1952, pp. 67-109; Homer Hoyt, *Market Analysis of Shopping Centers*, Urban Land Institute Technical Bulletin No. 12, Washington, D. C., 1949; E. J. Kelley, *Shopping Centers* (Saugatuck: Eno Foundation for Highway Traffic Control, 1956); R. M. Lillibridge, "Shopping Centers in Urban Redevelopment," *Land Economics*, May 1948, pp. 137-160; J. Ross McKeever, *Shopping Centers*, Urban Land Institute Technical Bulletin No. 20, Washington, D. C., 1955; S. H. Mott and M. S. Wehrly, *Shopping Centers, An Analysis*, Urban Land Institute Technical Bulletin No. 11, Washington, D.C., 1949; H. Potter, "Neighborhood Shopping Centers," *Architectural Forum*, 1943, pp. 76-78.

²⁵ Tables to support this statement are to be found in Garrison, Berry, et. al., *op. cit.* Others are available on request from the author.

answer this question it is necessary to examine both planning concepts and zoning practice.

Planning Concepts. The conceptual basis for modern planning of business land use lies in a well established tradition in the field of marketing which dates at least from the work of Copeland.²⁶ Reduced to its simplest form, the argument is that there are three types of retail and service business, convenience, shopping, and specialty, and that as a result there need only be three types of shopping centers, neighborhood supplying convenience goods, community supplying both convenience and shopping goods, and regional supplying all types of goods and services. This neat trichotomy fits in well with ideas of neighborhood and community planning units and proponents of the typology have found support in the hierarchical notions of central-place theory.²⁷ Such is the basic planning concept of an efficient business structure.

Zoning Practice. This planning concept has been carried through into zoning practice. Many examples could be used for illustration. Two typical cases are in the State of Washington.

The City of Spokane has recently developed a new zoning ordinance to replace an existing code dating from 1929.²⁸ Under the original code there was a single business zone. The new ordinance is so designed as to allow business to locate in the type of business center appropriate to its level: *Local Business Zone*, providing for small centers which serve the needs and daily requirements of people residing within one-half

mile of the center; *Community Business Zone*, designed to accommodate larger shopping developments with community facilities serving groups of neighborhoods within a distance of one-and-one-half miles of the center; *Central Business District, Commercial and Industrial Zones*, available for location of all business.

In Seattle the zones provided for business in the 1957 zoning ordinance²⁹ are: *Neighborhood Business Zone*, containing retail business and services needed to supply neighborhood planning units with daily needs and requirements; *Community Business Zone*, which may contain all retail stores and professional offices, banks and financial institutions, and professional service establishments; *Metropolitan Business Zone and Commercial Zone*, in which all types of business are allowed.

Contrast with Empirical Findings. The planning concept of a trichotomy of business centers is now generally accepted and used as a basis for zoning.³⁰ However, this theoretical trichotomy describes only the nucleated business centers found in reality. It describes neither highway oriented nor urban arterial business districts; neither does it suggest that localized developments can exist. The planning concept of business structure is thus inadequate. A business structure zoned solely according to such a concept would allow only nucleated centers in most of the urban area. Highway-oriented, urban arterial and localized developments could take place only in the unrestricted business and commercial zones.

Why does the planned system conflict with reality? The planner believes that ribbon or strip developments are not conducive to maximum social welfare in

²⁶ M. T. Copeland, "Relation of Consumer Buying Habits to Marketing Methods," *Harvard Business Review*, 1922-23, pp. 282-289.

²⁷ Only recently have discussions turned to weaknesses of central place theory in explaining the locations of all types of retail and service business. See, "Ribbon Developments in the Urban Business Pattern," *op. cit.*

²⁸ City of Spokane, *Zoning for Local Business Centers*, Plan Commission, 1953, and *Comprehensive Zoning Ordinance*, Plan Commission, 1956-1957.

²⁹ City of Seattle, *Zoning Code*, 1957.

³⁰ Further thinking along these lines is contained in The International City Managers' Association, *Local Planning Administration* (Chicago: International City Managers' Association, 1948).

urban areas.³¹ It has been common in planning circles to label such developments as uneconomical or hazardous. One widely used text states:

"... There is little to support the retention of commercial development along the highways. Consolidation of urban facilities is urgently needed to restore stability to property values and convenience for the daily multitude who daily patronize the variety of business enterprise in our cities. It is also needed to stem the insidious spread of blight which is gnawing at the core of cities. This consolidation will come by recreation of 'centers' of business and the rejection of 'strip' or 'shoestring' zoning along the highways which retain the horse and buggy tempo of the village."³²

There is certainly much truth in this. Uncontrolled ribbon developments cause congestion and accidents and are frequently sources of depression and blight. Yet there is every indication that demands exist which need to be served by business oriented to the highways.

Is there a solution to this apparent dilemma? Any solution should permit demands to be supplied yet should also remove impediments to traffic flow, reduce congestion and accidents, control conflicts between land uses, and thereby satisfy needs for both a sound civic design and desirable conditions of a competitive business economy. The technical answer may well be available already in the plazas which provide services on tollways or in some manipulation of the idea of a frontage road as a business development. An enlarged type of plaza or frontage road, with controlled access and egress, adequate off-street parking, etc., could satisfy needs of highway-oriented and urban arterial business types while in no way impairing the efficiency of highways.

³¹ Brian J. L. Berry, *Shopping Centers and the Geography of Urban Areas*, unpublished Ph.D. thesis, University of Washington, 1958, examines this notion in more detail.

³² A. B. Gallion, *The Urban Pattern* (New York: D. Van Nostrand & Co., 1950).

Implications for Planning and Zoning

Two implications follow from the foregoing discussion, the first for planning concept, the second for zoning practice.

(1) There is every indication that the urban business pattern comprises four viable groups of business types, each discrete in membership and locational requirements. At present, planning concept concedes a need for only one of these four groups, the nucleated. There is need for broadening of this limited planning concept, particularly since it seems possible to plan for the other groups without impairing the efficiency of highways.

(2) Current zoning practice, if entirely successful, would permit only nucleated centers in much of the urban area. Other groups of business would be able to assume a competitive pattern only if in unrestricted business areas and then only if these areas coincide with locational needs of the groups in question. There is particular need for zoning provision for highway-oriented and urban arterial types. Plaza or frontage road zoning is suggested. This would, on the one hand, guard against uncontrolled ribbon developments and, on the other hand, facilitate satisfaction of highway demands. In this way a marriage of design, welfare, and economics is possible, at least at the level achieved in planning for the nucleated centers of today.

What would the zoning ordinance look like if this suggestion were to be pursued? In addition to the present type of zoning to provide for the hierarchy of nucleated centers, it would contain a highway-oriented business zone limited to highway and urban arterial groups in plaza or frontage road locations.³³

³³ For an initial check list of business types appropriate to each zone see the tables of "Ribbon Developments in the Urban Business Pattern," *op. cit.*

In common with all planning and zoning for business such a solution would be unable to affect business patterns established before the ordinance but the capability to prescribe limits to the locational choice of new or relocating business would be there.³⁴ Serious doubts have been expressed elsewhere as to whether any pre-zoning of business cen-

ters is feasible.³⁵ The suggestions here have the limitations that gave rise to these doubts but, in common with the traditional planning principles, could serve as guides to a continuous planning and review process operating as business develops.

³⁴ Edgar M. Horwood, "Public Policy and the Outlying Shopping Center," *Journal of American Institute of Planners*, 1958, pp. 215-222.

³⁵ Always subject to the granting of variances.

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Early Reservation of Open Land†

By MORTON LUSTIG*

OPEN space is essential to a well-ordered urban environment. In many forms with many functions, open land serves both physical and aesthetic requirements of the townspeople. Neighborhood playgrounds, flood plains, parks, stream valleys, agricultural greenbelts, and forest preserves are all important to the urban community.

Timing is a critical factor in preserving open land. No one who has tried to recover open land from other types of use can doubt the necessity for earmarking and setting aside open spaces while they are still open. There are a number of ways to earmark open land.

Reservation by Regulation

Zoning is the most widely used device for regulating the use of land. From the beginning, zoning has been concerned with the very important open spaces on each lot: the setback and the yard. More recently, zoning controls have been extended to other kinds of open space on the lot, such as off-street parking areas and buffer strips. But zoning is also being used as a method of controlling or acquiring public open space as well as on-lot open space. One effective regulation for this purpose allows variable lot sizes within a given zoning district provided that overall density is not increased above a fixed maximum for any given tract. In a portion of Levittown, Pennsylvania, for example, the developer was permitted to reduce the lot size below that specified for the district. However,

he also had to set aside and dedicate open land for recreational and school use. This open land, added to the area in lots, gave an average lot area equal to that required for the district. Professor Roland Greeley of Massachusetts Institute of Technology, writing in *The American City*,¹ gives another illustration of variable lot size. Briefly, if you assume a 100-acre tract in a district zoned for one-acre lots, it would be possible to have 80 one-acre lots and 20 acres of street. By allowing half-acre lots, however, it would be possible to provide for 90 lots (on 45 acres), 15 acres of street, and 40 acres of open space. If the municipality has the right to accept a reduced lot-size-and-open-space package only when the open space arrangements are satisfactory in location and design, this type of regulation can be most effective.

New York State has another variable lot-size arrangement. The General City Law was amended within the past few years to broaden the subdivision review powers of planning boards. When subdivision plans are submitted the planning board may permit "reasonable changes" from the zoning requirements of the district within the limitations fixed by the zoning ordinance and provided that the average density for the tract does not exceed the average density prescribed by the zoning ordinance. Although this measure seems to be aimed at greater flexibility in mixing housing types (e.g., single-family and multiple residences) and in providing local shopping facilities, it could also be used to release parts of development tracts for open space.

† The material from which this article is drawn was originally presented as part of a panel at the 1958 annual meeting of the Pennsylvania Planning Association in Philadelphia, Pennsylvania.

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¹ "The Case for Low-Density Zoning," *The American City*, February 1958, p. 96. The article discusses legal, economic, and sociological implications of low-density zoning.

Zoning is also being used to keep land out of development altogether. In California, for example, at least three cities were incorporated for the specific purpose of zoning themselves exclusively for agriculture. In Wisconsin, large areas of the state are zoned exclusively for forest and recreational use. Even farming is not permitted. The Wisconsin zoning grew out of bitter experience when cut-over forest lands, unsuitable for crops, were settled by land-hungry farmers. Flood plain zoning is the result of another kind of bitter experience. To minimize future flood damage, many danger areas are now being zoned for open land or for highly restricted use. Now it is true that nature may not always put unfarmable soil or flood plains just where we most want our open spaces, but perhaps if we look a little harder we will find that there is a considerable degree of correspondence and that zoning for such open spaces can serve both objectives very effectively.

Zoning is carried even further in Denmark. National law requires the development of a regional plan around each major city. In the Copenhagen region land is divided into three broad zones: the first is land available for immediate development; the second is land which should not be developed for 15 years; and the third is land to be preserved indefinitely for agriculture and other open space. Since the prohibition against development deprives the owner of property rights, the national government has a special commission to fix compensation for this type of zoning "damages."

After zoning, perhaps the strongest regulatory device is the "official map." By whatever name it is called, the "official map" is a document, formally approved by a governmental agency, identifying land intended for future public use. Adoption of the map pre-

vents the property owner from using his land in a manner inconsistent with the proposed use—or at least, if the owner ignores the municipal *caveat*, he cannot claim compensation for improvements added to the reserved property after the date of the official map. In Pennsylvania the courts have narrowed the scope of the official map to street right-of-ways, but in other states the official map may apply to open public spaces such as parks and playgrounds. So far as I know, however, no state permits use of this device to retain open spaces NOT intended for public use—such as a permanent greenbelt of agricultural land.

The official map is a useful and effective tool. If possible, it should be applied to all types of open space to be reserved for public use—including sites for schools, incinerators, water and sewer plants, as well as parks and playgrounds. The main objection to this extended coverage is the fact that an owner is deprived of the full use of his property without compensation. To fix a reasonable limit to the owner's hardship, the reservation for public use might be limited to one year from the time the owner requests a permit to build or otherwise commit the property. (The one-year limitation already applies in some states). This will give the government officials at least one new budgetary period to make the necessary appropriation to buy (or to condemn) the land. Time is very much of the essence in this situation, but the chief consideration is to provide delay rather than speed. Delay is no virtue for its own sake, of course, but in governmental process it takes time to formalize decisions, to prepare papers, to make appropriations; and the time factor in and of itself may determine whether or not the public saves or loses a piece of ground essential for the public's use.

Adoption of an official map has another important effect. It puts the governmental officers on record with themselves. If these officers are later forced to act under pressure on a project included in the official map, they can act with confidence on plans prepared calmly and deliberately. Where there is no official map, and no other plan with status, municipal officials under pressure are likely to take the easiest choice rather than the best choice. Without a previous decision to fall back on, how can they avoid seeming arbitrary and capricious, even to themselves?

Subdivision control is a third device for protecting open spaces through regulation. By this process the planning agency can assure itself that a proposed subdivision conforms with municipal plans, including plans for open spaces. In large subdivisions, the developer can often be persuaded to dedicate open land for schools and playgrounds. When the subdivision is a smaller one, however, the community usually cannot depend on dedication of sizeable pieces of land and must be ready to buy or condemn what it wants. But, through subdivision review the community gets the opportunity to work out the relationship of the development to the desired open areas and the governmental agencies gain the time they need to take formal action for acquisition.

So far we have assumed that the community has a plan of open spaces to which developers can conform. That is a nice assumption, but it does not much resemble the facts. Without a plan toward which to point, it is much more difficult to persuade a reluctant subdivider that he should spare some land for common use. As a matter of fact, it is even difficult to persuade the planning commission and the governing body that the developer should be asked to spare

some land—and doubly difficult to convince them that it might be wise to spend money to buy and hold the open space. Under such circumstances the most to be hoped for is that stream beds, rough ground, and inaccessible areas which are of no use to the builder will be dedicated to the public.

Another set of regulatory devices are the historic and scenic area controls. Annapolis, Alexandria, Boston, Charleston, New Orleans, and Washington are some of the places that exercise special supervision of building design and the use of land in areas of historical significance. This type of regulation has been extended somewhat in Niagara Falls, where the community controls both space use and buildings in the area near the Falls, and in Charleston, where the community regulates the "entrance districts" of the City. For a thorough and exciting discussion of these and other related controls, read *Planning and Community Appearance*.²

Reservation by Purchase

Outright purchase is the usual method of acquiring land for public use. By this method local, county, and state governments have obtained almost all of their playground, park, forest, and game lands. In Pennsylvania there has been a recent surge in the state park and forest program resulting from the availability of "new money" and from strong administrative leadership in the Department of Forests and Waters. The new money has been made available by 1955 legislation pledging the revenues from oil and gas leases on state forest land to recreation, conservation, dam, and flood control projects. These revenues amount to about \$4,000,000 a year. With this source of funds, it will not be too long before the

² Henry Fagin and Robert C. Weinberg, editors, *Planning and Community Appearance* (New York: Regional Plan Association, Inc., 1958).

state attains its goal of a major park within 25 miles of every resident.

State and county parks are often some distance away from the heart of the developed and developing urban areas. This is so because land is costly on the urban fringe and because it is difficult to assemble large tracts near developed areas. Golf courses, on the other hand, are often found on the edges of the urban area. The preservation of such golf courses can add a significant amount of open land where it is most needed. In the Philadelphia area there are at least two very successful examples of municipal action to retain golf courses as open spaces. One municipality took an existing golf course on lease with an option to buy at the end of a stated period; the second municipality bought the golf course and leased it to a private operator. In both cases the operation of the golf course pays for the acquisition cost. This device for acquiring and holding a key type of open land deserves much wider use and attention.

Purchase of open land has been used more broadly in other places. The Borough of Mountain Lakes, New Jersey, a few years ago bought up all the vacant land in the Borough. Land was then sold to developers in small pieces to keep the rate of development digestible. It is not clear whether this type of brokerage is a valid "public purpose" in New Jersey, but it has not been tested in court, so it is working. Stockholm, Sweden, many years ago bought up all of the vacant land in the entire metropolitan area. Here, however, the purpose was in part to control development and in part to keep some land permanently open. Much of the open land was rented to farmers (often the owner from whom the land was purchased). The rentals paid the costs of acquisition, and provide a source of income besides. In Canada the Prime

Minister recently asked the national legislature for laws and money enabling the government to purchase a greenbelt of 59 square miles of open land around Ottawa, the Capital. Most of the land is to be leased to private owners, with the expectation that rental payments will cover purchase costs in the long run. The request by the Prime Minister is particularly interesting because, just three years earlier, he tried to accomplish the same objective without purchase. In 1955 he asked the City and Province to preserve the greenbelt by regulations prohibiting development. He offered financial help from the national government to compensate owners for the loss of development rights. He also promised that agencies of the national government would cooperate by refusing to underwrite development in the greenbelt area; the Central Mortgage and Housing Corporation, for example, would provide no financial assistance for housing in the greenbelt area. But the City and Province apparently would not or could not work out the regulations and the Prime Minister has turned to purchase.

Land for open space can also be acquired by private purchase. A good example is the Western Pennsylvania Conservancy. This nonprofit organization raised money by private subscription to purchase a number of key recreational areas near Pittsburgh. The Conservancy has acquired about 3,500 acres and it has given much of this land to the state for park development. Again, however, we must look outside this country to see how much can be done by people who have the will. In the Netherlands, the "Society for the Protection of National Monuments" was organized in 1905 to buy and retain important open spaces—at first, just those of historical significance; later, any that might contribute to public enjoyment. Funds were raised by

the public sale of shares and by 1956 the Society owned more than 36,000 acres. In addition, each province of the Netherlands has a similar private organization (called a "Landscape") to purchase open space on a smaller scale. These national and provincial societies now get some money from the government and also obtain considerable revenue from the sale of timber.

Reservation by "Not Quite Purchase"

"Not quite purchase" covers the methods by which government, without taking title to open land, gains enough control to stop development. This method also implies some cost to the government, either by payment to the owner or by tax concessions. We have already referred to several examples. In Denmark owners of land zoned out of development are compensated by a special commission. In Canada the Prime Minister suggested compensation for the loss of development rights if local or provincial regulation could be used to preserve Ottawa's greenbelt. In Wisconsin owners of land zoned exclusively for forest use are entitled to a tax concession. And in Pennsylvania, in 1958, a constitutional amendment was approved giving the legislature the power to enact tax concessions for land owners who maintain private forest reserves. The Dutch, too, use "not quite purchase." Under the National Beauty Act, tax concessions are granted to estate owners who are willing to preserve the wooded character of their estates, with increased concessions for owners who open their estates to the public.

An important extension of "not quite purchase" technique is suggested by William H. Whyte, Jr., assistant managing editor of *Fortune* magazine.² Mr. Whyte suggests that we preserve large open spaces by purchasing development

rights from the owner. The land itself would remain in private ownership. The owner could use the land for agricultural, estate, forest, or other open use, but he could not divide the land for housing development. By this method it would be possible to retain open spaces much larger than the space required for parks or for other direct public use. Land covered under development rights purchase would remain productive and would presumably pay local taxes based on the value of the property for the permitted uses. The owners would gain by a clear-cut commercial transaction, receiving full value for the land rights they sell. Their incentive would be immediate compensation for the "rights" of development, as against a speculative future compensation when the land actually becomes ripe for development. Owners have another incentive, especially those who would like to keep their property in open space uses such as agriculture. They frequently sell their land only when development occurs around them, and prices are forced up, taxes increase, and creeping urbanism changes the whole character of the environment. Governmental ownership of development rights would prevent this piecemeal, uncontrolled change, and would remove the pressure from the farmer or other owner who wants to keep his place in its present open character. Mr. Whyte's suggestion holds much promise for all of us who love the fields, the trees, and the freedom of space.

California is ready to experiment with the purchase of development rights. In June, 1959, legislation was enacted to permit cities and counties to acquire by purchase, gift, lease, or otherwise, "the fee or any lesser interest or right in real property in order to preserve, through limitation of their future use, open spaces

² William H. Whyte, Jr., "Urban Sprawl," *Fortune*, January 1958.

for public use and enjoyment.”⁴ The law states specifically that public funds may be expended for the purchase of property rights or interests. Additional flexibility is provided by permitting municipalities to acquire the fee to property with the purpose of selling or leasing the property to private owners subject to restraints on the future use of the property. Finally, the statute defines an open space as:

“ . . . any space or area characterized by (1) great natural scenic beauty or (2) whose existing openness, natural condition, or present state of use, if retained, would enhance the present or potential value of abutting or surrounding urban development or would maintain or enhance the conservation of natural or scenic resources.”

In closing I would like to say a word to some of the readers who are seldom with

⁴ An act to add Chapter 12 (commencing at Section 6950) to Division 7 of Title I of the Government Code, relating to the purchase of interests in real property by counties and cities and to the preservation of open spaces and areas for public use and enjoyment. (June 1959.)

us—the people who think that planning is pernicious stuff, and who believe that public control of open space is directly descended from the Communist Manifesto and the N.R.A. The fact is that the greenbelt idea is very old indeed, with Biblical references dating back to the thirteenth century B.C. For example, Frederic J. Osborne, a most able British planner, quoted from Numbers 35: verses 1-4, the Lord’s instructions to Moses: “. . . Command the children of Israel, that they shall give unto the Levites . . . cities to dwell in: and pasture lands for their cities round about them And the cities shall they have to dwell in: and their pasture lands shall be for their cattle, and for their substance, and for all their beasts. And the pasture land of the cities . . . shall be from the wall of the city and outwards a thousand cubits round about.”

Land Reform in the United Arab Republic

By KENNETH H. PARSONS*

THE land reform program in the United Arab Republic has centered upon limiting the land holdings of the relatively few persons who wielded great economic and political power in the old regimes. But this program, especially as it has developed in the Egyptian region, includes a reorganization of village agriculture along cooperative lines. There are essentially two coordinated programs in the Republic: the one in the Egyptian region has been operative since 1952; the program in the Syrian region is now being initiated. The two programs show the similarities of their kinship, for the more recent effort in the Syrian region is largely an adaptation of parts of the program already in effect in Egyptian territory before the formation of the Republic. It is the purpose of this comment to sketch out some of the principles underlying these programs.

The central land reform programs in the Egyptian region are those which were launched in Egypt after the 1952 Revolution: (a) the acquisition of cultivated lands from large holdings for distribution to cultivators; and (b) the rent regulation programs for tenanted lands. Similarly, the central feature of the land reform program in the Syrian region is that of acquiring and distributing to cultivators the "excess" areas of the large land holdings. In the latter, the Land Reform Administration is also charged with the administration and distribution of the state lands. These are much more extensive and valuable for agriculture than are the public domain lands in Egyptian territories.

The land reform program in each region is under the jurisdiction of the

Ministry of Agrarian Reform for that region. There are also separate Ministries of Agriculture for each of the two wings, or regions. All four of the Ministries are under the joint supervision of a Central Minister of State for Agriculture and Agrarian Reform.¹

I

The basic concepts of the land reform programs have been derived from the experience in the Egyptian region. The extension of the program to the Syrian region offers therefore a most interesting example of the adaptation of ideas to different conditions and circumstances. Consequently, it is instructive to compare in some detail the provisions of the laws and the operation of the programs in the two regions.²

The major item in the land reform programs in each region is the acquisition and distribution of lands under cultivation but held in "excess" by large land holders. In Egyptian territory this meant irrigated lands exclusively; in the Syrian region both irrigated and non-irrigated lands are included—the latter called Bali lands.

In Egypt at the time of the Revolution the Royal family—King Farouk and other descendants of Mohamed Ali—had extensive holdings of excellent lands. These lands were confiscated, amounting

¹ The present incumbent is the Hon. Sayed Marei who has been the chief director of the Egyptian land reform programs since their inception in 1952. The chief administrative officer since 1952 also has been Mr. Ezzat, Abd El Wahab. These men have gathered around them a small core of dedicated and talented young men with previous experience in the government services of Egypt.

² The most recent texts available in English are: for the Egyptian region, *Agrarian Reform Decree Law No. 178 of 1952* (with amendments), Cairo, Egypt: Agrarian Reform Organization, Public Relations Department, 1952; for the Syrian region, *Agrarian Reform Law No. 161*, Cairo, Egypt: UAR Agrarian Reform General Organization, Public Relations Department, November 1958.

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to some 180,000 acres or about one third of all lands acquired for distribution.

All privately-owned lands held by one individual above 200 acres were subject to requisition (forced purchase), except that as much as 100 acres of land above the 200-acre ceiling might be retained in the family by assigning it to two or more children. The landowner elected which lands to keep (except that lands could not be retained in a manner so as to destroy the functioning of irrigation facilities); the requisitioned lands were acquired by the government, with payment principally in bonds, at a rate of 70 times the annual tax.

In the Syrian region the ceiling on the maximum acreage of irrigated lands which a private owner is permitted to retain is virtually identical in area with that in the Egyptian region: 80 hectares of irrigated land. Again the owner may assign approximately 100 acres of irrigated land to his children, except that not more than 25 acres (10 ha.) may be assigned to each child. Since large areas of the Syrian region are not irrigated, a different basic ceiling is provided for Bali land, namely 300 hectares, or approximately 750 acres.

In the Egyptian region the average price paid to former private land holders for the requisitioned lands was approximately \$500 to \$600 per acre (with payment mostly in bonds). In the Syrian area, for the relatively small amount of land already requisitioned, the price is reported to be about \$200 per acre for irrigated lands and about \$90 per acre for Bali, or non-irrigated land. This payment is also in bonds.

Compensation to previous private owners in both regions is now in bonds bearing one-and-one-half percent interest, payable in 40 years. Originally the land purchase bonds of the Egyptian program were issued as thirty-year bonds,

bearing three percent interest. Within the past year approximately, the terms of the bonds in the Egyptian region have been changed to conform with the provisions of the law for the Syrian region.³

In the Egyptian region the law stipulates that the agricultural land shall be redistributed or allotted to "small farmers, so that each of them shall have a small holding of not less than two feddans and not more than five feddans, according to the quality of the land" (Art. 9). In the northern region no minimum allotment is prescribed, with the lands being "redistributed among the farmers so that each one of them shall have a small holding of not more than eight hectares of irrigated land" . . . or . . . "30 hectares of Bali land."

The differing size of the individual allotments to cultivators in the two regions reflects no doubt differences in quality and scarcity of land, type of farming, and the density of population. The difference in size of the individual allotments of redistributed lands, it is interesting to note, does not have a parallel in the size of retained holdings permitted; in both regions the basic ceiling for retained irrigated lands is 200 acres.

In both regions the requisitioned lands are sold to the cultivators at cost, plus a service charge. In the original Egyptian law the service charge was fifteen percent; in the more recent law for the Syrian region there is an overall charge of ten percent "for the costs of requisitioning, redistribution and other ex-

³The bonds are of limited convertibility. They may be used by the recipient or his heirs to meet obligations to government or to purchase "fallow" land for reclamation and development. In terms of investment effect the land reform program was evidently directed primarily to stopping the flow of funds into the speculative bidding up of already developed agricultural lands. Since the inauguration of the land reform program there has been a great upsurge in urban construction. The industrialization program is just getting underway in 1959 with a heavy emphasis in this first five-year plan upon industrial expansion.

penses" (Art. 14). In both regions the cultivator receiving an allotment of land is now given forty years to pay, with an annual interest charge of 1.5 percent.

There are virtually identical provisions in the two laws requiring "that Agricultural Cooperative Societies shall be constituted from among the farmers who have acquired the requisitioned lands." In the Egyptian region participation in such cooperative societies has been made a condition precedent to the acquisition of land by cultivators.

II

The recipient of land in the redistribution programs is required, in both regions of the United Arab Republic, to cultivate the land himself. Thus on these lands tenancies are forbidden. However there is considerable difference in the programs of the two regions regarding rental or tenancy policy for the land outside the requisitioned areas. The regulation of the rent of agricultural land is a major feature of the agrarian reform law in the Egyptian region (Articles 31-37). The maximum rate of rent for a full season is seven times the basic tax. Where land is rented for a single crop the maximum permitted is some fraction of this total—since most of the land in Egypt grows two or more crops per year.

There is no parallel provision in the Agrarian Reform Law for the Syrian region, but there is a parallel tenancy law or decree, with rent-regulating provisions. We have the impression that this law is not yet operative.

There is however a basic difference in the land reform laws for the two regions regarding the relation of the land rental market to the land reform program. In the Syrian region the market rent of land is accepted as a basis for the valuation of requisitioned land; in the Egyptian region the rent of land is an administered

price. In the Syrian territory the value of land is recognized to be ten times the annual rent—reflecting the rule-of-thumb method of land valuation prevalent over much of this general area. In the Egyptian territory however the value of land is arrived at through an assessment procedure—historically by first calculating an annual use value with the annual land tax now being rated at one seventh of the annual rental or use value; currently the annual tax of good agricultural land is around \$8 per acre per year; the corresponding cash rent would be \$56 per acre per year.

An interesting corollary to this rent regulation program is that, with rents fixed at seven times the annual tax, any change in the tax rates is reflected sevenfold in the rental rates. This ratio can of course be changed. But the "parity" issue remains as a part of the system of administered prices.

This regulatory effort has evidently been more effective than the common run of rent regulation programs. Approximately two-thirds of the land in Egypt is now operated by tenants—mostly cash tenants. To support the maximum rent provisions there has been a series of decrees (which will expire during this current crop season unless extended) giving tenants occupancy rights. Thus when the tenant cannot be removed he has protection from pressure for under-the-table supplementary payments which would raise the rent above the legally authorized maximum. Since 58 percent of the cultivated land in Egypt is owned in holdings of 10 feddans or less⁴ (with 49.3 percent in holdings of less than 5 feddans) it is obvious, with two-thirds of the land rented, that a substantial part of the tenanted land is rented from small owners. This has undoubtedly con-

⁴Sayed Marci, *Agrarian Reform in Egypt* (Cairo, Egypt 1957), p. 247.

tributed to the effectiveness of rent regulation. It is reported that the fixation of rents reduced the rent of tenants by 40 million pounds annually, or by something like one-third.

A program for reducing agricultural rents by publicly administered measures under economic conditions characteristic of Egyptian agriculture is of course an attempt at redistribution of the economic rent of land—from landlords to tenants. A parallel measure in the original land reform law intended to establish minimum wages for agricultural workers—redistributing income from farm operators to laborers—has not succeeded. A parallel program of price ceilings on agricultural products consumed as food is evidently operating effectively, diverting income from land ownership and operation to consumers.

III

Although the land reform program is just being initiated in the Syrian region, some interesting comparisons are already possible, due to the different conditions in the two regions. For example, under the Egyptian law it was possible to treat all land as being alike for purposes of the ceiling on holdings. This may reflect, in part, the judgment that the largest holdings were characteristically on very good land. In the Syrian region however soil, geography and land use practices are more varied. As a minimum it was necessary to take account of the difference in the productivity of irrigated and non-irrigated land, evaluated at a ratio of 1 to 3.75.

Furthermore, the arithmetic of land distribution in the two regions is very different. In Egypt before the 1952 Revolution approximately 20 percent of the land was held in ownerships of 200 acres or more. It is reported that 1,768 owners (6 percent of all owners) held

1,176,801 acres of land before distribution. After distribution these owners were estimated to have retained about 350,000 acres.⁵ The estimated difference represents the approximately 575,000 acres actually requisitioned for redistribution plus the private sales to small holders permitted under the law. Thus in Egypt the distribution of land embraced about 9 percent of the area of Egypt. In Syria, on the other hand, something like 20 or 30 percent of the cultivated area is reported to be subject to distribution.⁶

There is a relatively large area in Syria which has recently come under cultivation by dry farming in the Jezira district. This is an area of large-scale machine operations. Title to the land in this area has been actively disputed in recent years. Much of it was claimed by large operators either under old and vague Turkish deeds, or by the preemptive right of nine years of cultivations under a law of French mandate days. Furthermore, much of the land was claimed by sheikhs under traditional tribal grazing rates. Virtually the whole area however was also claimed by Syria as public domain lands reserved for occupancy by settler-cultivators. Much of this is available for distribution by the land reform organization. Public domain lands may be either sold or leased.

Something like two-thirds of the area of the Syrian Region has not yet been covered by field surveys precisely establishing property lines. In the areas where the title to land is in dispute between private claimants and the state, compensation will be paid to private parties only for that portion of the land which is adjudged upon investigation to

⁵ Sayed Marei, *ibid.*, p. 247.

⁶ One reliable estimate places the area available for distribution at 3.3 million acres. The IRBD Report on Syria, Economic Development of Syria (p. 4) gives an estimate of about 9 million acres of cultivated land in Syria in 1953.

be rightfully held by them. No compensation will be paid for the state domain portion. The distribution programs need not be affected.

The larger ceiling on allotments to cultivators in Syria implies that the recipients of land will get a better "break" than in Egypt, conformable with the much lower density of population. Of more importance, this difference of policy suggests that the distribution of land in the Syrian region is a policy of "Syrian lands for Syrians."

Essentially this idea of treating Syria as an independent entity runs through the whole program. The programs in the Syrian region are administered by Syrians and the whole approach seems to imply the realistic view that the program must be suited to Syrian conditions.

The provisions for the establishment of cooperative farming among the recipients of land are virtually identical in the laws for the two regions. However, the great and historic differences in the nature of administration and the role of irrigation in the two regions may be expected to lead to different outcomes. Egyptian agriculture is very intensive and is geared precisely to the flow of Nile waters. For decades and even centuries the allocation of water in Cairo has shaped the agriculture of Egypt. The result is not only a closely integrated cropping and irrigation system but, in effect, an agriculture of concerted effort with little leeway for individual variation in cropping patterns. The whole system of land allotments in the land reform program for the Egyptian region honoring the requirements of good rotational practice (as discussed below), is based upon this experience with a directed agriculture. Syrian farmers lack this experience. Consequently, if cooperative farming is to flourish in the Syrian region, one would expect it to be less

completely integrated in village operations.

IV

As the above remarks may suggest, it is appropriate to speak of an Egyptian approach to land reform. Not only is the program in the Syrian region essentially an adaptation of Egyptian ideas and procedures but at least the first versions of the Iraqi land reform program formulated after the July 14th Revolution also drew heavily upon the Egyptian experience. It may be useful therefore to attempt an interpretation of the basic ideas in the Egyptian approach.

(1) The land reform program in Egypt is, to date, a relatively conservative one in terms of ownership. It is based upon the preservation of private property in land with an upper limit on holdings and on rents to limit the economic and political power of individual landholders. Furthermore, the land distribution program is limited to the distribution of the excess acres, basically above 200 acres per owner. Only nine percent of the cultivated area of Egypt is thus subject to requisition and distribution. On these distributed lands tenancy is forbidden. However, it is quite clear that the direction of the land reform program in Egypt is dedicated to the maintenance of private investment in agricultural land. The maintenance of the 200-acre ceiling is evidence to this point. Should the ceiling be broken to a maximum of 100, or 50 acres, as was actively proposed before the Revolution,⁷ the whole prospect for private ownership of agricultural land would be changed.

(2) The major achievement of the land reform program in Egypt is in the reconstruction and development of the requisitioned villages. This area of

⁷ See, Gabriel Baer, "Egyptian Attitudes toward Land Reform 1922-1955," in *Middle East in Transition* (Luqueur, 1958).

approximately 500,000 acres operates as a virtual enclave in the agricultural economy. The efficient way in which the acquisition and distribution of land has been achieved is a tribute to administrative capacities of the directors and leaders of this program. The Egyptians are astute managers: in no other way could a nation with only one-quarter of an acre of land per person survive with limited imports and yet export roughly one-half-billion dollars worth of agricultural products each year.

(3) The most striking innovation in the organization of the economy is the reconstruction of the acquired villages as cooperative enterprises. The person receiving lands under the program is required, as a condition of acceptance, to join the village cooperatives. Each cooperative is run by a manager—so far appointed by the government—with a policy-making council of elected cultivator-members. There are considerable numbers of fragments of land pared off from the retained (200-acre) private holdings which do not lend themselves to cooperative farming and are being cultivated by individuals. These non-contiguous areas are reported to amount to some 20 percent of the total area requisitioned.

But the typical arrangement is that the land reform villages are operated as cooperatives, of which there are about 200. In this arrangement each recipient of land characteristically has 3 plots of land of equal size (as one acre). Each of these plots is an integral part of a larger field where 50 to 100 similar plots lay side-by-side. The whole village is thus cropped in a three-field pattern within which each landholder has a share in each field.

This adaptation of the ownership pattern to good agronomic practice is a

major innovation in public administration but the idea has been followed voluntarily for years in a few of the most progressive agricultural villages. Such an arrangement permits a common rotational pattern of 5 crops in three years. It concentrates the cotton to permit the use of poison-dust treatment for cotton parasites without contaminating food and feed crops and protects the cotton crop from seepage from rice irrigation by similarly concentrating the rice crops to large contiguous areas.

For certain purposes such as deep tillage, fertilizer applications, irrigation, insect control, etc., the village in the land reform program is treated by the management as a single firm; the work is done and each landholder is charged for the cost. However, the responsibility for producing the crop—seeding, cultivating and harvesting—falls to the individual landholder; also, the crop belongs to the family who owns the land upon which it is grown.

The cotton is marketed cooperatively; credit is extended by the Cooperative Bank through the village cooperative. The sales proceeds of the marketed crops are credited to the account of the individual landholder. All charges are debited to the individual accounts: for cultivation and other services performed, for fertilizer and seed bought, for repayment of the cooperative loans, and for the annual payment due on the land allotment. The cultivator receives only the net. However, in the more successful projects at least, the net income of the cultivators, according to official estimates, has approximately doubled as a consequence of the changes introduced by land reform. The goal of the land allotment is that the per capita income of the participants should reach 16.5

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Egyptian pounds, or \$41.25 at the current official rates of exchange.⁸

The net gain in annual income which a cultivator receives, when compared to the pre-reform era, is compounded of the following: (a) the cultivator has the essential incentives of individual ownership; (b) the annual charge for the land is less than the previous rent—the annual charge is figured at cost to the land reform agency plus 15 percent (i.e., about \$600 per acre) now amortized at 1½ percent interest over a period of 40 years; (c) the technical management of production has remained high; (d) the land reform organization is able through its supervisory and management functions to secure loans, machinery, fertilizer, etc., at lower cost than the same requisites of production are available to cultivators outside the land reform enclave; and (e) cooperative marketing of crops has brought substantially higher returns.

Through this type of organization the Egyptians have worked out a management system which makes it possible to adopt any method of machinery use or other innovation which careful calculation warrants without depriving the individual cultivator of the incentives for good individual husbandry or the sense of independence.⁹

Although the individual cultivators have relatively small room for independent decisions they do own the crop and thus retain the basic element of in-

dependence. However, the agriculture of Egypt has been highly integrated as an irrigation economy for centuries so that the cultivators in these same villages have never experienced wide latitude for independent action as compared to farmers in rain-fed agriculture.

In 1959, the first move has been made to release village cooperatives from centralized management. One or two of the earliest cooperatives in the land reform program have been put on their own, with the privilege of the general services of credit, purchase and perquisites, etc.

(4) The very success of the cooperative efforts in the land reform enclave raises questions about the possibility of extending the village cooperative approach to other villages. This has been tried since 1955 in an experimental way in the village of Nawag in Gharbia province. Here in this representative village of 1562 acres with 1585 owners there were 1181 holdings (operating units) cultivating land in 3500 plots. Of these 1585 owners, 1346 had one acre or less, and only 11 owners had more than 10 acres. The two largest holdings were about 40 acres each.

The village land owners were persuaded by the director of the Cooperative Department of the Land Reform Organization to pool their lands for cultivation in a manner similar to that followed by the cooperatives in the land

⁸ Ezzat, Abd El-Wahab, *Land Reform in Egypt*, Paper presented to FAO Center on Land Problems in the Near East, Iraq, October 1955 (mimeo).

⁹ Although the village cooperative programs of the Land Reform organization are quite inclusive, the major emphasis has been upon the production and business aspects of the village economy: management, marketing, increasing production, etc.—with marked success. If one were to place this approach in full perspective he would need to compare this type of village program with other approaches, which have relied upon education, cooperation, etc., without the sanctions that have accrued to the land reform organization through the control over land use. A series of village programs has culminated in the present program of "combined centers" sponsored since 1955 by an inter-ministerial Permanent Council for Public Welfare Services. Each

combined center has a physician, small hospital (15 bed), some 3 nurses, an elementary school program, an agricultural agent with demonstration plots, a community center, etc. By 1959, 250 combined centers were in operation out of a projected total of 900. Each center is intended to serve 3 to 5 villages with approximately 15,000 persons being within walking distance of the center. These combined centers offer the approximate equivalent of the community development program of India, Pakistan and elsewhere.

The combined centers and the Land Reform village organizations are essentially complementary, but have so far not been integrated in field operations. These parallel movements, including the more limited antecedents of the combined centers constitute a major laboratory of social and economic development, and deserve much more careful evaluation and comparative analysis than they have so far received.

reform villages. The consolidation of the separate tracts into large fields for single crops was achieved by exchanging the use of individual tracts so that no one was excluded from cotton growing for example, by having all of his lands outside the areas planted to cotton. The pooling and exchanging of land use was achieved by the advice and persuasion of a man trusted and respected by the villagers, who could also assure them of better seeds, cheaper fertilizers, etc., if they joined the cooperative. This experience has been profitable and generally satisfactory to the individual participants. The experiment is considered to demonstrate the basic feasibility of the cooperative reorganization of village economies. However, it is recognized that the cost in terms of educational and persuasion efforts is quite high. In short, as a pilot project the experiment was immensely successful; how to generalize the experience in a feasible manner is not at all clear.

V

The Egyptian experience with the cooperative approach to the reorganization of village economies in the land reform program thus seems to point to a basic dilemma, illustrated by the differences between the operation and management of the villages within the land reform program and the representative villages of the other 90 percent of Egyptian agriculture. On the one hand, there is a problem of how and whether to release the centralized direction, supervision and servicing of the distributed villages—essentially of reuniting the land

reform areas with the rest of the agricultural economy. On the other hand, there are the major limitations upon high quality farming and productivity inherent in the thousands of small parcels of irrigated land characteristic of Egyptian villages—as reported from the village of Gharbia which has been reconstructed on cooperative lines—particularly where cotton and rice are major crops. The key to the effective organization of the land reform villages is the control which the Land Reform Organization has retained by having the ownership of land pass through a public agency. There is no comparable public control over the areas outside the land reform villages. To achieve such control it would be necessary either to acquire the land or by some device reduce the ownership of land to a pure investment function with effective control over land use passing to some kind of governmental agency such as the Land Reform Organization.

Underlying this dilemma are: (1) the stark facts of pressure of population upon the land; and (2) the implicit question of whether it is actually feasible to organize such small scale agriculture around the market principle—of factor and product markets. The alternative to individual ownership and independent planning of farm operations is some kind of directed and concerted action such as has been devised in the cooperatives of the land reform villages. Under Egyptian conditions the necessity for survival presses hard upon the range of individual freedom and discretion in agriculture.

Economic Base Dynamics

By CHARLES T. STEWART, JR.*

THE value of the economic base approach, and of base ratios as planning aids, has been seriously questioned.¹ There is no magic number as a substitute for data collection and evaluation, for intelligent guessing, and for prayerful planning. Although measured basic-nonbasic ratios have shown wide variation, they may still be subject to generalization, once account is taken of systematic causes of variation.

It is our intent to discuss a number of determinants of the basic-nonbasic ratio, whose consideration may salvage something from the economic base approach for the planner's tool-kit. Several propositions will be asserted on the economic base as a variable. Reference will be made to facts and logic in their support. Inferences from these propositions will be drawn with respect to base ratios, changes in base ratios, and local leverage effects.

In spite of the accepted word-sequence of basic-nonbasic, the established usage for the ratio is basic denominator and nonbasic numerator. This usage will be maintained below. Thus if an increment of 100 in basic employment is accompanied by an increment of 200 in nonbasic employment, the ratio is 200/100 or 2. If in the future an increment of 100 in basic employment should be accompanied by an increment of 300 in non-

basic employment, the basic-nonbasic ratio would have risen or increased from 2 to 3.

Population and Area

The first assertion is that the basic-nonbasic ratio varies directly with size of city population.² The proposition itself hardly needs support and the only purpose of data is to quantify the relation between city size and base ratio. The correlation between city population and the basic-nonbasic ratio is not a matter of size of market and supply areas, i.e., not a matter of transfer costs. It is essentially a matter of economies of scale (under which we may include the advantages of diversification or variety). The larger the city, the greater the number of critical minima for economic production of goods and services which are satisfied.³ Economies of scale are supplemented by economies of agglomeration.

What is true on the supply side is also true on the demand side. The larger the city, the more dependent are its residents on the goods and services which it does provide.⁴ The growth in self-sufficiency applies also to social and cultural activities which do not enter the market place.

* See Blumenfeld, *op. cit.*, pp. 117, 126; Homer Hoyt and Arthur M. Weaver, *Principles of Real Estate* (New York: The Ronald Press Co., Third Edition, 1954) p. 352; Victor Roterus and Wesley Calcf, "Notes on the Basic-Nonbasic Employment Ratio," *Economic Geography*, January 1955, p. 18.

¹ Brian J. L. Berry and Wm. L. Garrison, "A Note on Central Place Theory and the Range of a Good," *Economic Geography*, October 1958, pp. 304-311; Otis Dudley Duncan, "Service Industries and the Urban Hierarchy," in *Proceedings of the Regional Science Association*, 1958; Hal H. Winsborough, "Some Variations in Industrial Composition with Size," in *Proceedings of the Regional Science Association*, 1958; Fenton Keyes, "The Correlation of Social Phenomena with Community Size," *Social Forces*, May 1958, pp. 311-315.

² W. J. Reilly, "Methods for the Study of Retail Relationships" (Austin, Texas: University of Texas, Bureau of Business Research, Research Monograph No. 4, 1929), pp. 7, 9, 20, 40. Victor Roterus and Wesley Calcf, *op. cit.*, *Economic Geography*, January 1955, p. 18.

* Research Economist, United States Chamber of Commerce. The views expressed herein are those of the writer and not necessarily those of the Chamber of Commerce.

¹ Hans Blumenfeld, "The Economic Base of the Metropolis," *Journal of the American Institute of Planners*, Fall 1955, pp. 114-132; James Gillies and William Grigaby, "Classification Errors in Base-Ratio Analysis," *Journal of the American Institute of Planners*, Winter 1956, pp. 17-23; R. W. Pfouts and E. T. Curtis, "Limitations of the Economic Base Analysis," *Social Forces*, May 1958, pp. 303-310; Charles M. Tiebout, "The Urban Economic Base Reconsidered," *Land Economics*, February 1956, pp. 95-99; Melvin L. Greenhut, "Comments on Economic Base Theory," *Land Economics*, February 1959, pp. 71-75.

Self-sufficiency is not the only dimension of change as a function of city size. There may be greater diversification of taste and consumption in larger cities than in smaller, reflecting both increased variety of individual wants and experience, and greater heterogeneity of large city populations.

The second assertion is that the basic-nonbasic ratio varies directly with size of area. There is little prospect that the ratio could be inferred from a knowledge of area size alone, or conversely. The "foreign" trade sector depends on many factors other than geographic size. The general correlation however is obvious and even necessary. As an area increases in size it comes to include commodities and services of even larger market areas and eventually it begins to incorporate commodities of even larger supply areas as well.⁵ In other words, as an area grows in size it supplies and consumes internally a growing range of services and goods; and it imports a lessening percentage of the inputs required for the goods and services it does supply. Transfer costs are the main determinant of the relation between area and the basic-nonbasic ratio. Here again the only purpose of data is to provide a quantitative measure of the relation between the base ratio and the area size; but in this case there is little prospect of finding numerical values subject to wide generalization.

As a city grows in population it also grows in area so that there may be an uncertain borderland where the basic-nonbasic ratio increases as a function of both population and area.

The expenditure pattern will vary with city size, not alone because of differen-

tial local availability of goods and services, nor because of the effects on tastes of exposure to a greater variety of goods and services and ways of life. Price structures for small and for large cities are different. The cost of land, for instance—a significant component of construction costs and house rents—increases with city size. The effect of price structure differences is probably to reduce the basic-nonbasic ratio with increasing city sizes because the bulk of items whose cost rises seem to be local services, whereas the cost of many manufactured goods may fall because of scale economies in distribution. The effects however are complex; only a detailed study could hope to arrive at assured conclusions on their direction and magnitude.⁶

Income and Economic Progress

The third assertion is that the basic-nonbasic ratio declines with economic progress, at least up to an advanced stage of interregional specialization and high per capita income.⁷ This third determinant of the base ratio is independent of the first two—city population and size of area considered—so that the ratios appropriate to particular values of population and area can be specified only for particular levels of economic specialization and welfare.

Of the two dimensions of economic progress mentioned above—interregional specialization and level of income—only the second need be considered. For to say that the basic-nonbasic ratio depends on the degree of interregional specialization is a tautology. The statement is still desirable as a caution against over-simplified correlation of the base ratios with population and area alone.

⁵ Berry and Garrison, *op. cit.*, pp. 304-311; P. D. Converse, "Factors Determining Retail Shopping Preferences," *Dun's Review*, August 1947, pp. 21-3, 62; P. D. Converse, "New Laws of Retail Gravitation," *Journal of Marketing*, October 1949, pp. 379-384.

⁶ Robert M. Lillibridge, "Urban Size: An assessment," *Land Economics*, November 1952, pp. 346ff.

⁷ Pfouts and Curtis, *op. cit.*, p. 309; Blumenfeld, *op. cit.*, p. 126; Homer Hoyt, "Homer Hoyt on Development of Economic Base Concept," *Land Economics*, May 1954, p. 185.

Income level is indeed a measure of individual specialization, to be distinguished from regional specialization. What it does measure in a rough way is the continuum from a subsistence to an exchange economy. This means more than the dichotomy between subsistence and market agriculture. It measures also other shifts of economic function from household to market: agricultural processing, food preservation, cooking, and storage. The shift encompasses the transition from the local woodlot to electric power; from household manufacture of furniture, textiles and clothing, tools and utensils to commercial production of all these goods for sale on the market. It also applies to services, not only from kitchen to restaurant, but commercial entertainment, communications, education. Increased specialization and exchange generally means a rise in per capita income although the income corresponding to a given degree of specialization is much higher say in the United States than in Japan. But whatever the effects of specialization and exchange on per capita incomes, they greatly enlarge the public (as distinguished from household) functions and institutions appropriate to cities of any given population.

The effects of economic progress, as expressed in rising per capita incomes, on the basic-nonbasic ratio are twofold. The first has already been mentioned above: the shift of functions from the subsistence or household economy to the market. This shift by necessity involves some increase in "imports" and "exports" of goods and services for not all the exchange transactions are confined to the defined unit area, no matter where the border be drawn.

The second effect of rising per capita incomes is a change in patterns of consumption and demand which must either

be reflected in corresponding changes in local patterns of employment and production or in increased imports and therefore increased exports required to pay for the imports. In practice there will be considerable change in local patterns of employment and production and some increase in "foreign" trade and change in its composition.

In order to determine the effects of changing consumption patterns on the basic-nonbasic ratio it is necessary to consider in some detail the extent and direction of changes in consumption as people move from one level of income to another. We refer not to the immediate effects of possibly temporary changes in income but the permanent effects on consumption patterns of significant and permanent increases in per capita income.

The shift from subsistence to specialization and interdependence reduces the basic-nonbasic ratio. The changing patterns of consumption with increasing incomes have the same effect, at least up to a point of quite high per capita incomes. Higher incomes mean diversification of purchases for any category of goods or services and therefore a greater dependence on goods and services produced elsewhere. This is true for agriculture: with higher standards people graduate from a wheat-and-potatoes, or meat-and-potatoes standard to a more varied diet some of which requires increased imports. It is also true of manufactures: construction materials, clothing, furniture, household equipment, as well as capital goods required for their manufacture. The greater the diversification in each of these categories, the smaller the basic-nonbasic ratio in each category.

A higher income per capita however means much more than diversification of purchases. It results also in markedly changed proportions spent on different

categories. In the first stage of income increase past the peasant-feudal level, a smaller proportion of income is spent on food and agricultural products, a larger proportion on manufactures. At a higher level of income, a smaller proportion comes to be spent on manufactures also, and a larger proportion on services. (This is Engels' law which, seen from the production side, is none other than Colin Clark's law restricted to household budgets, and abstracting from differences in spatial distribution of production and consumption.)

Now what effect does this shift in the composition of expenditures have on the base ratio? The answer will vary from place to place according to its circumstances, but in general the shift from agriculture to manufacturing tends to reduce the basic-nonbasic ratio. We know this to be true because the preponderance of goods moving interregionally is manufactures and industrial raw materials, not foods.

The effects on the base ratio of the shift from manufacturing (and agriculture) to services is uncertain. Some of this shift is a mere transfer of functions from the household to the market: restaurant, laundry, etc. Conceptually, it lowers the base ratio only very slightly, mainly to the extent that the commercial service establishments are more heavily capitalized than the households whose functions they assume. (In some cases this may not be true.) Statistically, it may raise the base ratio, for domestic services performed at home are reflected hardly at all in employment and production statistics. Transfer of such functions to the market is accompanied by an increase in labor force participation rates as housewives and other household workers seek employment. The statistical effect depends upon the employment pattern of workers

newly released from the household economy.

In this connection it is well to distinguish between a subsistence sector and functions performed in the household. In backward countries there is no real difference. In advanced countries, however, the household is far from a self-sufficient economic unit even in the functions it performs itself. Cooking, washing, heating, cleaning, sewing depend upon the purchase by the household of both materials (food, fuel, cloth, soap) and of tools and utensils (stove, furnace, plumbing, sewing machine, washing machine, electric current). The distribution of domestic services between households and commercial establishments is both a direct function of city size and of income level and distribution.

A second type of service develops with the growth of distribution and manufacturing and serves to facilitate and complement the production and distribution of goods. This type includes transport, communications, finance, insurance, and the like. Clearly this type of service has a considerable basic component and its growth may not increase the basic-nonbasic ratio. The rise of such services is a consequence of economic development rather than of high per capita income.

A third type of service,⁸ although to a limited extent a transfer of function from household to market, is predominantly a new addition to the horizon of taste and consumption. It includes professional services: doctors, lawyers, higher education; travel and tourism, recreation and the like. Of these, professional services are predominantly local in character but

⁸ This threefold classification of services, labelled respectively tertiary, quaternary, and quinary services, is discussed by Nelson N. Foote and Paul K. Hatt in "Social Mobility and Economic Advancement," *American Economic Association Proceedings*, May 1953, pp. 364-378.

travel is not, and higher education to a considerable degree is also a basic rather than local service activity. High per capita income is the main condition for the growth in services of this type. Their availability in turn stimulates further growth in income.

Considering the shift to services from an overall perspective it can be said that, insofar as it is a transfer from subsistence activity, it reduces the basic-nonbasic ratio. Insofar as it is a shift from market agriculture and manufacturing, on the whole it raises the ratio. At very high levels of per capita income most of the decline in percentage shares of consumption impinges on market agriculture and manufacturing, not on the subsistence sector. Therefore, a point is reached where the basic-nonbasic ratio ceases to fall, and may begin to rise. This result is inevitable unless significant shifts occur within the services sector; from services primarily local in character to travel, college away from home, and other services with a low basic-nonbasic ratio.

In considering base ratios much more attention should be devoted to services and their classification in terms of basic versus local service components than has been devoted heretofore, and to forecasting the future composition of services.⁹

Leverage Effects

We have seen that growth in population and area both tend to increase the basic-nonbasic ratio. We have seen also that with rising incomes there is a tendency for the ratio to fall, although at high enough incomes it is possible that this tendency is reversed. We have noted that in addition to the basic (export) and local service components of local activity there is a subsistence com-

ponent which must be distinguished from the local service component because it does not enter the market or figure in the institutional profile and employment structure of the city or local area.

In assessing the leverage effect of increments in basic activities or negative leverage effects of losses in basic activity, it is necessary in the first place to distinguish between the secular change and the city-growth component on the sizes of the basic and local service sectors and therefore on the basic-nonbasic ratio. The secular change component is independent of local changes in the size of the base, reflecting rather national and international trends in productivity, per capita income, and expenditure patterns.

It is further necessary, whenever considering dynamic changes in industrial composition and population size, to distinguish between the average basic-nonbasic ratio and the marginal ratio. Since the ratio is not the same for different city populations it is not possible to take existing distribution of employment and income by basic and local service components and assume that this ratio will reconstitute itself following addition of sizable new industry to the basic sector. The addition changes the fundamental relation between basic and local service components, generally raising the ratio, so that the marginal basic-nonbasic ratio is larger than the average ratio.

The distinction between average and marginal base-ratios is also required to account for lags. One lag, of relatively short duration, is the adjustment period in which some components of the industrial structure expand to meet the demands imposed by initial increments in other components. This lag may be evident in shortages of certain local services and products but not where it is feasible to prevent shortages through imports. Since this lag is constantly re-

⁹ See George J. Stigler, *Trends in Employment in the Service Industries*, (Princeton, New Jersey: Princeton University Press, 1956).

newed, some differentiation between autonomous and induced increments in economic activities may be inferred from persistence of shortages. The second lag would be more longlasting even if it were not also continually renewed. The present industrial structure and institutional profile of any city is the product of a long historical process. It is undergoing continuous modification, including changes in the base ratio, even without the impetus of autonomous changes in the size or composition of the base; for the present structure embodies varying amounts of technological slack, of institutional rigidity, and of occupational disequilibrium, which are only eliminated through the long-drawn out process of physical decay, institutional attrition, and human death or migration. Because the present structure, including present basic-nonbasic ratio, is inherited from the past—sometimes a distant past—it provides a shaky foundation for estimating structure and ratios many years ahead.

In the third place, it is necessary to distinguish between leverage effects and ratios of exports to domestic production. The larger the area considered as a unit, the smaller the proportion of its production and employment which is in the export sector. A small city may export one-half its output; a large city one-third; a region one-fifth; the entire country may export only one-twentieth of its output. It does not follow that the employment or income or population multiplier increases from two for the small city to twenty for the country.¹⁰ Beggar-thy-neighbor export policies, even if not countered, are not miraculous designs for full employment and rising population and income. The leverage (or multiplier) effect of a given increment in basic industry is of

the same order of magnitude for small cities and large, for small regions and whole nations. This conclusion must of course be qualified somewhat by the preceding considerations: economies of scale and agglomeration, for instance, may mean a somewhat higher leverage exerted by a given industry in a large than in a small city. Differences in marginal propensities to import have effects in the same direction.

It is also not true, as sometimes claimed, that effort to increase local self-sufficiency by raising the basic-nonbasic ratio necessarily increases the leverage effects of given changes in basic industry. The leverage effect (the effects on total income, or employment, or population, as one may choose, of changes in the same variables in the basic sector) is the result of the functional relations between the production of the diverse goods and services which comprise the economic and institutional structure of the area. The leverage effect is not determined by the division of these various functions between local and export sectors although its value certainly is affected.

What varies with the size of a region is the degree of self-sufficiency, not necessarily the leverage. It is false to assume that all local employment is geared to the needs of the export base. Much local service and manufacture serves the needs of the local population dependent on them for employment and income. To a considerable extent people do live by taking in each other's washing. In backward areas there is also a large subsistence component in the population. This component, although raising the basic-nonbasic ratio, does not mean a greater leverage. The leverage effects of changes in basic industry can be higher in advanced than in backward regions even though the basic-nonbasic ratio is lower.

¹⁰ Blumenfeld, *op. cit.*, p. 117; Charles M. Tiebout, "The Urban Economic Base Reconsidered," *Land Economics*, February 1956, p. 98.

The leverage effects of a new textile mill are essentially the same in towns of all sizes. They are limited largely to the "payroll" effects: the increase in local trade, services, manufactures, and in imports resulting from the spending of the payroll. The only significant difference between large and small towns in the case of textile mills is that nearly the entire payroll will be spent locally in the large city but only a smaller portion in the small town; and that induced imports will be higher in the small than in the large town because of its lesser self-sufficiency. These differential payroll effects by size of town (or region) are essentially similar whatever the new industry, although it does make some difference whether a payroll of a given size is received by a few highly-paid skilled workers or by a much larger number of low-pay unskilled workers and whether the industry employs mainly men or mainly women. The pattern of spending and the propensity to import are different.

A steel mill has a higher leverage effect than a textile mill with the same payroll for two reasons: it may make larger local purchases of transport, water, electric power, and possibly limestone and coal; and it is likely to attract linked firms: metal-fabricating plants, coke ovens, refractories, chemicals, and the like. The textile mill by contrast, has little agglomerative attraction and limited demands for local products other than fiber. For these reasons it is desirable to estimate multipliers or leverages for a wide range of industries of basic nature. Agglomerative effects may also be functions of the size of the base input and of the town.

The export base is usually defined to include the contribution of linked industries: intermediate processors, contributors of necessary services, and the like, thus eliminating the main source of

differential leverages for different types of base input. Many of these linked services and manufactures are not mobile: they are local services such as power, fire protection, transport, which expand to meet the additional needs of the base increment.

This ex post procedure however is unsatisfactory operationally because it stands half way between a tool and the desideratum for which the tool is designed. If indeed we already know the agglomerative effects on linked output and employment of specific changes in some component of the base, we already know much of what the economic base concept is designed to supply. In fact we know enough perhaps to proceed by more sophisticated procedures, such as input-output analysis, to predict the total effects on the local economy and population of the changes in a part of the base.

What remains to be known, the general multiplier effect of changes in the base including agglomerative effects, is relatively independent, in size and in specific components, of the specific type of change in base inputs. The large differences between towns and regions, and between industries, are the agglomerative effects following from increments in particular basic industries which call for industry by industry multiplier estimates rather than basic-nonbasic ratios.¹¹

The assumption that the leverage is the reciprocal of the basic-nonbasic ratio says in effect that there are no internal leakages; that all shrinkage in the income stream as initial increments of expenditure are respent and respent again by those who receive them as income is the

¹¹ Richard B. Andrews, "Mechanics of the Urban Economic Base: The Problem of Base Measurement," *Land Economics*, February 1954, p. 59; "Mechanics of the Urban Economic Base: Special Problems of Base Identification," *Land Economics*, August 1954, p. 265; Gillies and Grigaby, *op. cit.*, p. 22.

result of increased imports.¹² A further assumption implicit in the view of leverage as the reciprocal of the basic-nonbasic ratio is that the initial structure of industries, institutions, and employment is reconstituted after a suitable lag no matter what the changes in the size and composition of the base. If the composition of the base changes and if the local-service industries are in any way closely geared to base needs, then they too must change. Even if only the size of the base changes, we cannot expect a proportionate change in the sizes of all the non-basic components of the community.

The absurdity of the base ratio-reciprocal concept of leverage can be illustrated by gradually enlarging the area considered. As more and more activities become internal to the area, the export base becomes a smaller and smaller percentage of the total. The leverage however depends upon the functional relations of various segments of the economy as well as on the division between local and nonlocal economic activity. These functional relations are not affected by widening the borders of the local area although the basic-nonbasic ratio is. A doubling of the export base in a small city may in time double local income, employment, and population; but no one could believe that a doubling of U. S. exports would double American income, employment, or population. What would change would be the ratio between export and domestic production. Some increase in income might occur: the fate of employment would depend upon the initial level of unemployment and the effects on population would be limited sharply by immigration restrictions.

¹² On local leakages, see George H. Hildebrand and Arthur Mace, Jr., "The Employment Multiplier in an Expanding Industrial Market: Los Angeles County, 1940-47," *Review of Economics and Statistics*, August 1950, p. 242.

The economic base analysis of small areas in fact assumes no barriers at all to migration. If migration involves even moderate costs then a minimum "threshold" increase in basic income and employment must occur to attract migrants. Mobility of factors other than labor is also implied for the economic base cannot be expanded very much solely through an increment in labor force unless we assume large unemployed supplies of other factors. The economic base analysis then is a method for robbing Peter to pay Paul. For the total population and labor force of large areas can increase very slowly.

The neglect of feedback reactions in economic base analysis follows from its urban focus and from its focus on exports alone. It may seem plausible to ignore feedback in computing ratios and leverage effects if the city's "foreign" trade is widely distributed throughout a region much larger and much more populous than itself. But in fact the bulk of most cities' "foreign" trade is concentrated within a much more limited area, within which the city bulks large as a proportion of the total population and income. Changes in a city's imports may, through their income effects on the selling area, have effects on the city's exports which are not negligible. Consideration of the city in a context somewhat more intimate and relevant than the national or world economy could substantially improve our foresight.¹³

The fact that all United States population is not concentrated in two or three cities although larger cities have higher leverages is ample warning on the conceptual and practical limitations of the economic base analysis. The United States has shown no tendency to monopo-

¹³ George H. Hildebrand and Arthur Mace, Jr., *op. cit.*, 241-249; Charles M. Tiebout, "A Method of Determining Incomes and Their Variation in Small Regions," *Proceedings of the Regional Science Association*, 1955, pp. 2-12.

lize world population, income, and production, in spite of a very low export-domestic production ratio, as well as of a persistent tendency to over-export. This too should give us pause.

A further implicit assumption of the economic base analysis is Say's law. If only the size of the basic sector can be increased, then total local employment, income, and population will increase by various multiples of the base increments; demand will take care of itself.

The distinction between industries with limited and with extensive market areas is both incidental and insufficient. Incidental, because the relevant consideration is locational autonomy, not size of market area, which is an important, but neither necessary nor sufficient condition for locational autonomy. Insufficient, because industries with wide market areas may still have no choice of location if they are sited with respect to raw materials not widely disseminated.

Conclusion

The stark simplicity of economic base approach, with its basic-nonbasic ratios, leverage effects, and the like, offers an attractive short-cut. But it is a dangerous and uncertain course as well. As a simple frame of reference suitable for indicating fruitful areas of inquiry and for organizing data collected it has much to recommend it. But as a substitute for planning, for data collection and evaluation, it is a trap for the unwary. Confusion of the method with some specific results, such as three-to-one ratios of changes in total employment to changes in basic employment and confusion of empirical observations with causal analysis, can only lead to bad planning. This is not to say that bad projections and the plans based on them are worse than no projections and no plans; but in terms of the additional benefits of more sophisticated procedures the additional costs of

their use will in the more important cases recommend them in preference to simple economic base concepts.

The economic base approach gives us an industrial profile, or a caricature of a profile. If supplemented with data on money flows it would become a local or regional input-output table which, in the extreme case, would contain only two "industries," the base or exporting industry, and the service, or non-exporting industry. The economic base approach assumes that as the city or region grows the same profile will persist but made larger. If we know therefore the future proportions of one of the features of its industrial physiognomy, we can predict the rest of the profile. The drawbacks of the economic base approach as predictive device are: (1) the extraordinary difficulty of predicting the growth of the most volatile component of city growth; (2) changes in institutional profile consequent on growth in city area and population; (3) dependence of the profile on the level of income and its distribution as well as on tastes, area, and population; and (4) dependence of the profile on specific composition of the economic "base," i.e., on the industrial components not ubiquitous in cities of the same size.

What uses then remain for the economic base approach? First, it may be of considerable value in preliminary stages of planning for new towns. Second, it is useful in evaluating the impact of specific increments (decrements) in autonomous industry on income, employment, and population. Third, it may serve to spot deficiencies in the institutional profile which could be eliminated economically. Fourth, it may serve in evaluating the relative merits of alternative new industries in terms of their contributions to local income, employment and popula-

tion, their requirements for additional services and facilities of local nature, and consequently their impacts on the tax base, tax rates, and tax revenues.

It should be noted that for each of the above purposes an economic base approach, as the structural analogue of a two-industry input-output table, is of rather less use than a more detailed multi-industry profile (or stock model) and particularly a multi-sector input-output (or flow model) approach. The value of the economic base approach has been

considerable but more as a pedagogic device than as a prediction and planning tool. It should not be expected to give accurate results, nor depended upon to the exclusion of other methods. It is time to explore the serviceability of more complex models, whose specifications have been accumulating in the form of many valuable studies of city industrial populations. But it would be a mistake to discard the economic base approach or to neglect possibilities for refinement in the concept and its applications.

Some Aspects of the Economic Structure of Depressed Industrial Areas†

By LOWELL E. GALLAWAY*

IN the post-World-War-II American economy it is possible to detect growing concern about the economic status of communities with persistently high levels of unemployment, communities which are commonly known as depressed areas.¹ Recognition of the depressed area as a national problem is ultimately a result of the shift in economic philosophy which produced the Employment Act of 1946 and its injunction that the federal government is responsible for the creation of "conditions under which there will be afforded useful employment opportunities . . . for those able, willing, and seeking to work."² More specifically, the cognizance of this problem stems from two postwar developments in the American economy, the relative success in controlling the downward phase of the business cycle and the growth of a body of statistics pertaining to area employment conditions.³ The former makes the unemployment in depressed areas obviously apparent while the latter provides a source of data that enables the afflicted areas to be pinpointed accurately.

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¹ See e.g., Harry S. Truman's statement, "Employment and Unemployment," *Report of the Subcommittee on Unemployment of the Joint Committee on the Economic Report*, Congress of the United States, Washington, D. C., United States Government Printing Office, 1950, Appendix A, p. 101; *Economic Report of the President*, January 1955-59, Washington, D. C., United States Government Printing Office; and the various legislation introduced in the recent sessions of Congress to deal with this problem.

² Public Law 304, 79th Congress, Sec. 2.

³ The Bureau of Employment Security of the United States Labor Department inaugurated a program of providing unemployment data for individual labor market areas in 1948. In 1949 the program was regularized to provide bi-monthly reports on individual labor market areas.

The existence of these areas of chronic unemployment has led to some amount of speculation as to their nature. This paper will analyze two of the generalizations which have been frequently applied to depressed areas: (1) the thesis that depressed areas are "one-industry" towns and (2) the thesis that depressed areas are non-diversified economically.⁴

Depressed Areas Defined

A depressed area may be broadly defined as an area in which the level of unemployment is persistently and substantially in excess of the national level.⁵ The terms "persistently" and "substantially" obviously need further clarification. Presently, the only available source of regular labor market data is the United States Bureau of Employment Security (BES) bi-monthly estimates of area employment.⁶ The BES regularly classifies 145 major labor market areas within the continental United States according to

⁴ These generalizations are typically found in popular literature and the statements of officials of depressed areas. See, e.g., "Area Redevelopment," *Hearings Before the Subcommittee on Labor of the Committee on Labor and Public Welfare*, United States Senate, Washington, D. C., United States Government Printing Office, 1956, pp. 17-18, 53, 157, 161-64, 207 and 337; "Altoona's Angle," *Business Week*, June 4, 1949, p. 36; "Altoona: One Company Town in Search of Industry," *ibid.*, May 10, 1952, pp. 76-80; and "How a City Solves a Job Problem," *U. S. News and World Report*, December 28, 1951, pp. 52-54.

⁵ Other factors might be considered in the determination of whether an area is depressed, such as the level of per capita income or the level of production within the area. However, for the purposes of this paper the unemployment criterion will be adopted.

⁶ The BES techniques for estimating area unemployment have definite shortcomings. For a complete discussion of these see, Herbert S. Parnes, "Unemployment Data from the Employment Security Program," *The Measurement and Behavior of Unemployment* (Princeton, New Jersey: National Bureau of Economic Research, Princeton University Press, 1957) pp. 123-53. Despite their failings, the BES estimates are the only available source of regular local labor market data and will be used to determine whether an area is depressed.

the tightness or looseness of their labor market.⁷ These areas are divided into two broad groups, those with a substantial labor surplus and those without. The dividing line is a level of unemployment of six percent of the labor force. In relation to the postwar (1946-1956) national average level of unemployment of 3.85 percent, six percent does not seem to be an unreasonable standard for indicating unemployment "substantially" in excess of the national level.⁸ Consequently, it will be used as the basis for such determinations in this paper.⁹

How "persistently" substantial unemployment must occur for an area to be considered depressed must be decided in a more arbitrary fashion. A criterion has been adopted which considers an area depressed if it has had a BES classification indicating a substantial labor surplus a majority of the time. In order to allow for the possibility of an area's becoming depressed in the later years of the period which will be considered (1948-1956), the proviso is added that any area classified

by the BES as a substantial labor surplus area for a period of two consecutive years during the interval January 1954 through November 1956 shall be classified as depressed.

Combining the definition of "persistent" unemployment with the one for "substantial" unemployment produces the following definition of a depressed area for the purposes of this paper:

A depressed area is one which has had a BES labor market classification indicating unemployment in excess of six percent of the labor force for either a majority of the BES classification periods or for a period of two consecutive years (12 classification periods) in the interval January 1954 through November 1956.

Location of the Depressed Areas

When this standard is applied to the BES classifications for the period 1948-1956, 19 major labor market areas qualify as depressed areas.¹⁰ These areas have been classified as having excessive amounts of unemployment approximately 75 percent of the time. Five of the areas, Fall River, Lawrence, Lowell, New Bedford, and Providence, are located in New England; seven areas, Utica-Rome, Altoona, Erie, Johnstown, Scranton, Wilkes-Barre-Hazleton, and Atlantic City, are in the Middle Atlantic States; and four, Asheville, Durham, Winston-Salem, and Charleston, West Virginia, are in the South Atlantic States. Of the remaining three, only one, Tacoma, is located west of the Mississippi River. This geographic distribution shows more than four-fifths of the depressed areas concentrated along the

⁷ "Each major labor market area has at least one central city with a population of 50,000 or more, according to the 1950 census. In most instances, boundaries of major labor market areas coincide with those of standard metropolitan areas as determined by a Federal interagency committee" See, "Employment and Unemployment Statistics," *Hearings Before the Subcommittee on Economic Statistics of the Joint Committee on the Economic Report, Congress of the United States*, Washington, D. C., United States Government Printing Office, 1955, p. 135.

The BES also classifies some smaller labor market areas but only on the request of some interested party (e.g., the local representative to Congress, local officials, or local labor union leaders). Since these classifications are not made regularly and there are no uniform criteria governing the selection of the areas to be classified, they will not be considered.

⁸ The annual percentages of unemployment for the period 1946-1956 are: 1946, 3.96; 1947, 3.56; 1948, 3.36; 1949, 5.47; 1950, 4.98; 1951, 2.99; 1952, 2.66; 1953, 2.51; 1954, 5.01; 1955, 4.03; and 1956, 3.78. Source: *Federal Reserve Bulletin*, 1947-1957.

⁹ From the inception of their classification program through July 1951 the BES employed a classification system that did not have a limiting value of six percent unemployment. Consequently, for this period the criterion for determining substantial unemployment must be modified as follows: substantial unemployment in the period 1948 through July 1951 is indicated by unemployment in excess of seven percent of the labor force of an area.

¹⁰ The depressed areas are Terre Haute, Indiana, Fall River, Lawrence, Lowell, and New Bedford, Massachusetts, Duluth-Superior, Minnesota, Atlantic City, New Jersey, Utica-Rome, New York, Asheville, Durham, and Winston-Salem, North Carolina, Altoona, Erie, Johnstown, Scranton, and Wilkes-Barre-Hazleton, Pennsylvania, Providence, Rhode Island, Tacoma, Washington, and Charleston, West Virginia.

Atlantic seaboard. This region contains less than one-half of the 145 major labor market areas regularly classified in the continental United States.

Sources of Data

The data employed in this paper are drawn from the labor force statistics presented in the decennial population Census of 1950.¹¹ The use of Census data is facilitated by the general comparability of the BES major labor market and the Bureau of the Census standard metropolitan areas boundaries. The classification system employed in treating the labor force data of the 1950 Census follows that of the Census Bureau.

The major employment categories in this classification system are agriculture, forestry and fisheries, mining, construction, manufacturing and services. In addition, manufacturing employment is sub-divided into the following categories: furniture, primary metals, fabricated metals, machinery (except electrical), electrical machinery, motor vehicles, transportation equipment, other durables, food and kindred products, textile mill products, apparel, printing and publishing, chemicals, and other non-durables.

One problem is encountered when the Census data are used. The Census Bureau classifies only employed workers. Unemployed members of the labor force are classified by occupation rather than industry. If the unemployed could be ignored, this would present no difficulty.

¹¹ Using the 1950 Census data poses a problem. These data do not accurately describe the population and labor force characteristics of major labor market areas throughout the period 1948-1956. They do, however, provide such a description for one point in time. By assuming that this point provides a representative sample of the population and labor force characteristics of major labor market areas, it is possible to use the data. This assumption introduces the possibility of error. Population shifts, changes in consumer demand, the development of new products, the introduction of new technologies, or changes in any number of factors may produce distortions. However, in the absence of any abrupt changes in the society (such as the cataclysm of World War II) the assumption will be made.

This is not the case. There is no reason to assume that unemployed workers would be distributed proportionately throughout the various classifications. In fact, if the propositions which are being tested in this paper are true, the reverse should be the case, particularly in the depressed areas. Consequently, it is necessary to classify as many of the unemployed as possible into the industrial categories listed above. By use of a rather detailed classification system, approximately 60 to 75 percent of the unemployed can be so classified.¹²

Methods

Establishing standards by which such phenomena as dependence on one industry and lack of economic diversification can be measured presents a major problem. All too often judgments are made in a vacuum. For example, what degree of dependence on one industry warrants classifying an area economy as "one-industry?" Is it five, ten, twenty, or fifty percent of the community's employment in a single industry? Before one can say, it is necessary to have some kind of measuring device. In this paper the measuring device is obtained by employing two groups of area economies. One consists of depressed areas and the other contains only non-depressed areas. The latter is a reference group which provides the standards by which data pertaining to the economic structure of depressed areas can be evaluated.

The determination of the exact composition of the reference group of areas is complicated by three factors. The first relates to several disparities between the BES and Census area classification systems. The BES considers as major labor market areas five cities which are not included in a Census Bureau standard

¹² This classification system is presented in the author's unpublished doctoral dissertation, *Depressed Industrial Areas: A National Problem*, The Ohio State University Library.

metropolitan area and sub-divides the New York-Northeastern New Jersey standard metropolitan area into four major labor market areas.¹³ Consequently, the necessary Census data are not available for nine of the BES's major labor market areas. Since none of these is a depressed area it is not a serious obstacle. These nine areas will be omitted from the analysis.

A second and more serious problem is a lack of homogeneity in the industrial structure of the remaining 117 non-depressed major labor market areas. A clue to this is found in the data pertaining to the percentage of what Colin Clark and others call secondary employment (defined as the sum of mining, construction, and manufacturing).¹⁴ When these data are presented in the form of a frequency distribution, they exhibit definite tendencies toward bimodality (see Table I).

TABLE I—PERCENTAGE SECONDARY EMPLOYMENT, 117 NON-DEPRESSED MAJOR LABOR MARKET AREAS, UNITED STATES: 1950

Percentage Secondary Employment	Number of Areas
15.00-22.99.....	12
23.00-30.99.....	27
31.00-38.99.....	22
39.00-46.99.....	28
47.00-54.99.....	19
55.00-62.99.....	8
63.00-70.99.....	1

Source: *Census of Population: 1950, Vol. II, Characteristics of the Population, Parts 2-50*, United States Department of Commerce, Bureau of the Census, Tables 35 and 73.

¹³ The five non-standard metropolitan areas are Hampton-Newport News-Warwick, Battle Creek, Muskegon, Aurora, and Joliet. The New York-Northeastern New Jersey area is divided into the areas of Newark, Patterson, Perth-Amboy, and New York.

¹⁴ See, Colin Clark, *The Economics of 1960* (London, England: Macmillan, 1942), p. 22n; Allen G. B. Fisher, *The Clash of Progress and Security* (London, England: Macmillan, 1935), pp. 117-118; and Louis H. Bean, "International Industrialization and Per Capita Income," pt. V, *Studies in Income and Wealth* (Princeton, New Jersey: National Bureau of Economic Research, 1946), p. 121. The term secondary employment is generally used in a developmental context to indicate the type of employment activity that is characteristic of an economy once it moves out of the stage of producing agricultural commodities primarily.

The explanation apparently lies in the geographic location of the areas. If the distribution is divided, roughly on the basis of Eastern and Western United States, extremely dissimilar distributions are obtained.¹⁵ (See Chart I)

The distribution for the Eastern areas includes 68 non-depressed major labor market areas whose mean percentage of secondary employment is 44.52, while the distribution for the Western areas is composed of 49 non-depressed areas with a mean percentage of secondary employment of 28.79. Both distributions are uni-modal, the Eastern skewed to the left and the Western to the right.

Such a lack of homogeneity would deprive the standards derived from the reference group of much of their significance. Fortunately, 18 of the 19 depressed areas are in the same geographic area as the Eastern Group of non-depressed major market areas. This makes it feasible to narrow the reference group to the 68 non-depressed Eastern areas and conduct the analysis on the basis of 18 depressed areas.¹⁶

The last problem encountered is a disparity between the population of the depressed major labor market areas and the population of the non-depressed areas. All but one of the 18 Eastern depressed areas is in the 100,000 to 400,000 population range while only 45 of the 68 Eastern non-depressed areas is in that range. In order to avoid any distortion stemming from this population differential, it is advisable to narrow the reference group of areas to the 45 non-

¹⁵ The exact geographic boundaries selected for the purposes of making this division are the Western Wisconsin border to the Mississippi River, southward to the Southern border of Tennessee and eastward along the Southern Tennessee and North Carolina boundaries to the Atlantic Ocean. All areas North and East of this boundary are located in the Eastern group and all others in the Western. Although this boundary runs through the middle of the Duluth-Superior area, the entire area is considered as being in the Eastern group.

¹⁶ The depressed area omitted from consideration is Tacoma.

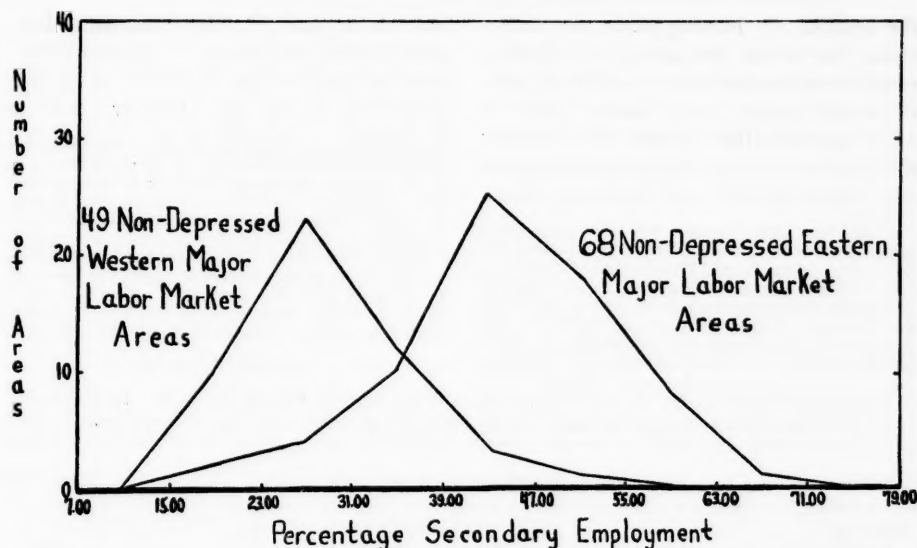


CHART I—PERCENTAGE SECONDARY EMPLOYMENT, 68 NON-DEPRESSED EASTERN AND 49 NON-DEPRESSED WESTERN MAJOR LABOR MARKET AREAS; UNITED STATES; 1950.

depressed Eastern major labor market areas with populations ranging from 100,000 to 400,000. These will be referred to as non-depressed areas throughout the remainder of the paper and will be compared with the 17 depressed areas in the same population range.¹⁷

The One-Industry Argument

The first step in testing the validity of the thesis that depressed areas are characterized by excessive dependence on a single industry is to determine the major source of employment in each area. The sources of employment which are considered are agriculture, forestry, and fisheries, mining, construction, and the sub-divisions of manufacturing. Services employment is excluded from consideration due to its diversity. Two of the sub-divisions of manufacturing, other durables and other non-durables,

present difficulties. Since they are by definition residual categories, it is illogical to accept them at face value in those instances where they are the major source of employment. A solution to this problem is possible if it is assumed that an unusually high level of employment in these categories can be attributed to one industry. If such an assumption is made, an estimate of the importance of the industry can be made by subtracting the normal amount of employment in that category, from the actual employment. Normal, in this case, is the average amount of employment in either other durables or other non-durables.¹⁸ The corrected percentage is then compared to the percentage for the next largest source of employment and the larger is used in

¹⁷ Providence is the depressed area with a population greater than 400,000.

¹⁸ In the 62 areas being considered, no instance of other durables being the major source of employment arises. However, several instances of other non-durables being the major source of employment do occur. The normal amount of non-durables employment used in these cases is 4.63 percent.

the analysis.¹⁹ Having made the corrections, the mean percentage of employment in the major industry of the 45 non-depressed major labor market areas is 14.57 percent (see Table II). Similar data for the depressed areas show a mean percentage of employment in the major

industry of 16.37.²⁰ However, these data need further refinement. Altoona is unusual in that the major source of its employment is in an industry that is

mated are derived by computing the percentage of manufacturing employment accounted for by the major other non-durable industry and multiplying it by the percentage of total employment accounted for by manufacturing in 1950. The respective percentages derived by the technique of subtracting the normal amount of other non-durable employment are: 18.96, 11.94, 17.59, 17.75, 11.87, and 14.47.

²⁰ The percentages for the individual depressed areas are: Terre Haute, 8.27; Fall River, 25.48; Lawrence, 39.08; Lowell, 24.06; New Bedford, 21.96; Duluth-Superior, 10.68; Atlantic City, 9.30; Utica-Rome, 8.25; Asheville, 8.72;

(Continued on page 343)

TABLE II—PERCENTAGE OF EMPLOYMENT ACCOUNTED FOR BY MAJOR INDUSTRY, 45 EASTERN NON-DEPRESSED MAJOR LABOR MARKET AREAS, POPULATION 100,000-400,000, UNITED STATES: 1950

Area	Percentage	Area	Percentage
<i>Connecticut</i>		<i>New Jersey</i>	
Bridgeport.....	9.75	Trenton.....	6.10
Hartford.....	9.66	<i>New York</i>	
New Britain-Bristol.....	19.55	Binghamton.....	17.93
New Haven.....	8.09	Syracuse.....	8.02
Stamford-Norwalk.....	8.02	<i>North Carolina</i>	
Waterbury.....	18.44	Charlotte.....	10.35
<i>Delaware</i>		Greensboro-High Point.....	21.50
Wilmington.....	16.18	<i>Ohio</i>	
<i>Illinois</i>		Canton.....	16.74
Davenport-Rock Island-Moline....	23.15	Hamilton-Middletown.....	11.29
Peoria.....	21.16	Lorain-Elyra.....	23.47
Rockford.....	19.63	Toledo.....	9.35
<i>Indiana</i>		Wheeling-Steubenville.....	22.16
Evansville.....	17.98	<i>Pennsylvania</i>	
Fort Wayne.....	11.83	Harrisburg.....	6.88
South Bend.....	23.03	Lancaster.....	11.79
<i>Maine</i>		Reading.....	15.92
Portland.....	5.80	York.....	8.10
<i>Massachusetts</i>		<i>Tennessee</i>	
Brockton.....	19.14	Chattanooga.....	12.36
Worcester.....	8.34	Knoxville.....	10.07
<i>Michigan</i>		Nashville.....	8.66
Flint.....	51.36	<i>Virginia</i>	
Grand Rapids.....	7.98	Richmond.....	7.78
Kalamazoo.....	12.12	Roanoke.....	7.96
Lansing.....	23.34	<i>West Virginia</i>	
Saginaw.....	15.11	Huntington-Ashland.....	7.17
<i>New Hampshire</i>		<i>Wisconsin</i>	
Manchester.....	17.77	Kenosha.....	19.07
		Madison.....	12.83
		Racine.....	17.81

Source: *Census of Population: 1950, Volume II, Characteristics of the Population, Parts 2-50*, United States Department of Commerce, Bureau of the Census, Tables 35 and 73.

classified by the Census Bureau as a service.²¹ Consequently, the 4.45 percent figure for Altoona is an understatement.²² If Altoona is disregarded in the analysis, the resulting mean percentage for depressed areas increases to 17.11.

The significance of the difference between the mean percentages of employment in the major industry for depressed and non-depressed areas can be determined by comparing the variation within the two groups of areas to the variation between the two groups. This comparison produces an F value of 1.0696²³ which is not significant at the .25 level of significance.²⁴ Such differences hardly seem sufficient to validate the thesis that depressed areas are characterized by excessive dependence on one industry.

The Diversification Argument

In order to test the thesis that depressed areas lack economic diversification, it is necessary to establish a criterion by which the economic diversification of an area can be measured. For this purpose a technique used by the Federal Reserve Bank of Philadelphia is employed.²⁵ Simply stated, the technique consists of accepting some percentage distribution of employment as ideal and computing the deviations from this ideal

(Continued from page 342)

Durham, 12.05; Winston-Salem, 14.65; Altoona, 4.45; Erie, 11.18; Johnstown, 23.58; Scranton, 13.52; Wilkes-Barre-Hazleton, 23.00; and Charleston, 20.35. Source: *Census of Population: 1950, Vol. II, Characteristics of the Population, Parts 2-50, Tables 35 and 73, United States Department of Commerce, Bureau of the Census.*

²¹ This is the "business and repair services" industry.

²² See fn. 20.

²³ The mean square deviation between classes = 70.2720 and within classes = 65.6821 which produces an F value of 1.0696.

²⁴ This method of testing provides an estimate of the probability that the difference between the two percentages could be the result of chance. The statement that an F value of 1.0696 is not significant at the .25 level of significance means that there is at least a 25 percent probability that the difference it refers to is purely the result of chance.

²⁵ See, *Business Review*, Federal Reserve Bank of Philadelphia, January 1957, pp. 8-9.

distribution. The deviations are then totaled irrespective of sign and subtracted from 100. One hundred represents the ideal distribution and is indicative of perfect diversification. The smaller an area's index, the less diversified it is.

For this paper, the ideal distribution will be that of the 62 Eastern major labor market areas (both depressed and non-depressed) in the 100,000 to 400,000 population range. In computing this distribution the actual (rather than percentage) labor force data for each area were used. This was done to weight the influence of each area according to the size of its labor force. The resultant distribution is presented in Table III.

TABLE III—COMPOSITION OF LABOR FORCE, BY INDUSTRY, 62 EASTERN MAJOR LABOR MARKET AREAS, POPULATION 100,000-400,000, UNITED STATES: 1950

Industry	Total Employed	Percentage of Total
Agriculture.....	199,599	3.81
Forestry and Fisheries.....	5,043	0.10
Mining.....	126,283	2.41
Construction.....	304,992	5.83
Furniture.....	72,292	1.38
Primary Metals.....	209,425	4.00
Fabricated Metals.....	142,784	2.73
Machinery (Except Electrical)...	260,204	4.97
Electrical Machinery.....	84,626	1.62
Motor Vehicles.....	165,445	3.16
Transportation Equipment.....	32,718	0.63
Other Durables.....	131,700	2.52
Food and Kindred Products.....	123,495	2.36
Textiles.....	216,394	4.13
Apparel.....	117,420	2.24
Printing and Publishing.....	73,586	1.41
Chemicals.....	89,342	1.71
Other Non-Durables.....	209,842	4.01
Not Specified Manufacturing...	12,740	0.24
Services.....	2,655,822	50.74
Total.....	5,233,752	100.00

Source: *Census of Population: 1950, Vol. II, Characteristics of the Population, Parts 2-50, United States Department of Commerce, Bureau of the Census, Tables 35 and 73.*

The mean value for the diversification indices is 53.49 for the non-depressed areas (see Table IV) as compared to

46.43 for the depressed.²² Repeating the analysis of variation used in testing the one-industry thesis produces an F value of 3.2498 which is significant somewhere

between the .05 and .10 levels of significance ($F_{.05} = 4.0012$ and $F_{.10} = 2.7914$).²⁷

Apparently, there is more validity to the thesis that depressed areas lack economic diversification than there is to the one-industry argument. However,

²² The indices for the individual depressed areas are: Terre Haute, 53.89; Fall River, 27.19; Lawrence, 23.48; Lowell, 50.53; New Bedford, 36.64; Duluth-Superior, 56.79; Atlantic City, 40.76; Utica-Rome, 77.31; Asheville, 49.28; Durham, 48.78; Winston-Salem, 48.84; Altoona, 48.53; Erie, 56.69; Johnstown, 30.37; Scranton, 57.99; Wilkes-Barre-Hazleton, 40.23; and Charleston, 41.94. Source: *Census of Population: 1950, Vol. II, Characteristics of the Population, Parts 2-50*. Tables 35 and 73, United States Department of Commerce, Bureau of the Census.

²⁷ The mean square deviation between classes = 622.0628 and within classes = 191.4179. The resultant F value (3.2498) means that there is at least a 5 percent probability but not a 10 percent probability that the difference referred to is the result of chance.

TABLE IV—INDEX OF ECONOMIC DIVERSIFICATION, 45 EASTERN NON-DEPRESSED MAJOR LABOR MARKET AREAS, POPULATION 100,000-400,000, UNITED STATES: 1950

Area	Index	Area	Index
<i>Connecticut</i>		<i>New Jersey</i>	
Bridgeport.....	55.40	Trenton.....	77.36
Hartford.....	59.62	<i>New York</i>	
New Britain-Bristol.....	21.24	Binghamton.....	47.46
New Haven.....	65.17	Syracuse.....	70.94
Stamford-Norwalk.....	69.82	<i>North Carolina</i>	
Waterbury.....	34.34	Charlotte.....	53.73
<i>Delaware</i>		Greensboro-High Point.....	50.49
Wilmington.....	62.81	<i>Ohio</i>	
<i>Illinois</i>		Canton.....	51.47
Davenport-Rock Island-Moline....	56.99	Hamilton-Middletown.....	53.24
Peoria.....	52.01	Lorain-Elyra.....	46.65
Rockford.....	44.56	Toledo.....	69.91
<i>Indiana</i>		Wheeling-Steubenville.....	40.16
Evansville.....	60.63	<i>Pennsylvania</i>	
Fort Wayne.....	62.35	Harrisburg.....	59.84
South Bend.....	43.45	Lancaster.....	54.27
<i>Maine</i>		Reading.....	62.79
Portland.....	46.96	York.....	53.23
<i>Massachusetts</i>		<i>Tennessee</i>	
Brockton.....	56.64	Chattanooga.....	69.39
Worcester.....	74.02	Knoxville.....	65.57
<i>Michigan</i>		Nashville.....	53.24
Flint.....	3.61	<i>Virginia</i>	
Grand Rapids.....	69.40	Richmond.....	48.93
Kalamazoo.....	62.99	Roanoke.....	51.22
Lansing.....	43.70	<i>West Virginia</i>	
Saginaw.....	52.58	Huntington-Ashland.....	67.69
<i>New Hampshire</i>		<i>Wisconsin</i>	
Manchester.....	30.52	Kenosha.....	36.23
		Madison.....	45.99
		Racine.....	48.06

Source: *Census of Population: 1950, Vol. II, Characteristics of the Population, Parts 2-50*, United States Department of Commerce, Bureau of the Census, Tables 35 and 73.

the results are by no means conclusive. Perhaps the safer course is not to accept either the one-industry or lack of economic diversification characterizations of depressed industrial areas.

Conclusion

The concern of many of those who are intimately associated with depressed areas over the problems of dependence of an area on a single industry or lack of economic diversification is mildly reminiscent of the "autarky" argument that frequently enters into lay discussions of the desirability of international trade.²⁸ Often, concern of this type motivates rather extensive and grandiose programs designed to diversify area economies in order to insulate them from the vicissitudes of economic life.²⁹ Such an approach to the depressed area problem does not take full account of the necessity of area specialization in a highly interdependent exchange economy. A concentration of area employment in a single industry or industries is indicative of the specialization that characterizes the American economy. Of course, one result of this is increased interdependence between area economies. If developments in other area economies (or the economy as a whole) quite seriously affect the major industry of an area, depressed areas may result. However, this is not a sufficient argument for dispensing with area specialization. The logical extreme of eliminating area dependence on a single industry or industries would be the creation of a number of virtually self-sufficient "little" economies which would undoubtedly entail a sizable sacrifice of

levels of output for the economy as a whole.

There could be some justification for approaching the problem of depressed areas from the standpoint of attempting to diversify their economies if depressed areas were markedly more dependent on a single industry or substantially less diversified than other areas. However, this is apparently not the case as was demonstrated in the empirical analysis presented in the paper. This suggests that as a nation we might be better advised to treat the depressed area problem within a context that accepts the necessity and desirability of area specialization.

At the local level one of the chief concerns of area officials is the prevention of chronic area unemployment. Within the framework of area specialization just described local officials obviously have little control over the factors that generate area unemployment, i.e., the periodic changes that characterize a dynamic economy.³⁰ Consequently, their alternatives in attacking the problem of chronic unemployment are limited. They may either (1) reject the concept of area specialization (with the results previously discussed)³¹ or (2) concentrate on projects designed to facilitate adjustment to the unemployment which may be generated by the demise of an important industry. The latter approach rejects the

²⁸ The major exception to this generalization is the rather obvious point that local planners can contribute to avoiding significant unemployment by emphasizing the acquisition of industries with great growth potential. However, the execution of such a plan requires a great deal of ability to predict prospective trends in the general economy and does not solve the problem of what to do when the growth industries cease to grow.

³¹ The adoption of this approach by local officials raises the possibility of a conflict between the aims of local areas and society as a whole. The conflict need not prove serious unless local areas embark on a substantial program of subsidization of private industry which might produce a misallocation of resources. However, it is doubtful if local communities can seriously affect the normal pattern of area specialization unless they employ sizable subsidies.

²⁹ See fn. 4.

³⁰ See, e. g., the statement of Hon. Francis J. Lawlor, Mayor of the City of New Bedford, Massachusetts, *Area Redevelopment*, p. 350, which, in part, reads: "Its [New Bedford] crying need, of course, has been diversification of industry. With local self help and municipal management, we are trying to fulfill this need."

idea that local officials can control the economic future of their area and emphasizes adjustment to economic change once it occurs.³² The analysis presented

³² This is consistent with much of economic theory with its

in this paper makes a case for the adoption of this approach by local officials.

emphasis on minimizing the frictions that are encountered in the process of adjusting to economic change.

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Recent Trends in the Economy of Greece

By ANTHONY R. TOMAZINIS*

EVEN a casual observer who happened to have visited Greece at the beginning and then again at the end of the present decade (1948-1958) would have been aware of significant changes in the country's economy. New industries have sprung up in many cities bringing industrial output to heights unknown in Greek history. Agriculture advanced at such a fast pace that it amazed even Greek economists and made the country almost self-sufficient in foodstuffs for the first time in its history. Trade and general commerce benefiting from the progress made in industrial and agricultural production, made giant strides during the last years. In terms of Gross National Income (hereinafter referred to as G.N.I.), the development of the Greek economy is remarkable. An increase of about 75 percent in G.N.I. has been experienced during the last ten years while the population increase in the same time has not exceeded 9.5 percent. From the low level of 39 billion drachmas in 1949 the G.N.I. had reached the level of 63 billion drachmas, in constant prices, by 1957 (see Table I). The final figures for the G.N.I. for 1958 are not available at this writing but the increase in industrial production (ten percent above 1957 levels) and in agriculture shows evidence that the increase of the G.N.I. in 1958 was at least comparable with that in 1957. Regardless of the manner by which the G.N.I. is estimated in Greece and the difference found between estimations of G.N.I. in various countries, the fact remains that an impressive increase in production has been achieved in Greece during the last ten years. During the same time-period the population of

Greece showed a significant reduction in the rate of increase. There was an average of only one percent annual population increase as against 1.40 in the decade 1930-1939. Every theory of economic development relates the increase of the G.N.I. to four major factors: capital accumulation, population growth, utilization of new resources, and technological progress.¹ In Greece, as in a number of other under-developed countries, the scarce factor is capital. Population growth has progressed and has passed the mark where more population will bring more economic growth. That is why it is so significant that the increase of the G.N.I. has been accompanied with such a low rate of population growth.² The prospects for the immediate future at least are also bright. The optimism is based on three outstanding factors of the Greek economy the effects of which have been realized thus far in only a very small degree. These three factors can be described simply as the following: (1) high rates of gross capital formation; (2) availability of abundant electric power all over the country; and (3) significant changes in the proportions of the different components of the G.N.I.

Capital Formation

Since 1949 the development of the country's natural resources has been rapid. Until then there had been little accomplishment in that direction. Nothing had progressed from the stage of discussion. There were two elements pervading this situation. First, the

¹ B. Higgins, "Economic Development of Underdeveloped Areas, Past and Present," *Land Economics*, August 1955, p. 180.

² H. Leibenstein, *Economic Backwardness and Economic Growth* (John Wiley & Sons, Inc., 1957), Chapter 10, pp. 147-175.

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country was deprived of almost any sort of capital for centuries. Especially lacking was the monetary capital required for new investments. It must not be forgotten that when the western countries experienced their industrial revolution Greece was still largely occupied by the Ottoman empire or had just been liberated. For decades no flow of capital from Europe to Greece had occurred as in the case of the British capital to the United States.³ Within the country it was also next to impossible to accumulate capital with the given stage of trade and economy. Only after 1909 and practically only after the wars of 1912 to 1922 were the circumstances satisfactory so that a small amount of capital was available. At this stage industry and general development began to appear. Thus the whole effort of modernization and development has a history of scarcely more than 40 years.

During the 1920's and 1930's the country made remarkable strides forward especially in types of development which did not need great capital investments and had quick returns, such as textile and foodstuffs. The Second World War interrupted this progress and reduced the country's productive machine to levels far below those of 1939. Until 1949 the productive capacity of the country was still under prewar figures, the country being just out of a civil war and still without substantial capital for new investments. The situation turned bright only when the war reparations started to pour into the country and the American aid restored her economic prospects. Investments in every phase of the national economy were vitally needed if the country was to stay even at the same level of development. Since the increase of population was constantly decreasing the

amount of income per capita, only a greater rate of investments than the rate of population growth could alter the situation. This has been the case and constitutes the first major factor of Greek development in the last decade. From 1949 to 1957 the rate of gross capital investment in Greece was one of the highest in Europe and two percent higher than the rate in the United States (see Table I). It was also about seven and a half times the rate of population growth.

The investments were possible only because of American aid and war reparations. They were facilitated through the remarkable insistence of different economic missions (UNNRA, Food and Agriculture Organization, American Economic Mission, etc.) that the economic development of the country was the only answer to the chronic economic problem of survival for Greece. Finally, the economic developments that took place were possible through an almost radical change of leadership in the government and in the economic institutions and ministries. Here enters the second major factor, the human element, contributing to the development of the country. Development could hardly be expected to make any headway without significant changes in Greek personnel. Political officeholders and, most important, senior civil service personnel have undergone significant and in some respects radical changes during the last decade.⁴ Perhaps more important than the change in politicians is the advancement, in many positions, of the administrative machinery of government and other leading institutions of the country, of new senior employees with new ideas and prospects. Many of them, educated in the postwar period, are

³ B. Higgins, *op. cit.*, p. 180.

⁴ W. McNeill, *Greece: American Aid in Action: 1947-1956* (The Twentieth Century Fund, 1957), pp. 176-179.

young men. The great difference between the men now and those in prewar positions or even just after the war, is that the present ones think in terms of programs, of planning ahead. Many of them are fully familiar with post-Keynesian economics while the technoeconomic factors and relationships with their complexities in priorities and implementation—the toughest problem in a long-range planning effort—is their concern. The outcome of all these changes is evidenced in Table I. It is obvious that the increase in G.N.I. is accompanied with at least a parallel increase in capital formation, gross and fixed. The trend continued in 1958. The final figures have not yet been announced (Summer 1959) for G.N.I. and Gross Capital Formation for 1958, but since the national budget for 1958 included increased amounts for investment and since the leading institutions of the country have had increased

funds for investments, it is safe to assume that at least a similar rate of growth was experienced during 1958.

Two observations on the subject of investments are in order. In the first place, a number of economists consider the rate of investments much lower than it ought to be. They argue that the country has greater need of development in creating new jobs and sources of income than the present rate of investment provides. The present rate extends indefinitely the period of time required before Greece can become economically self-sufficient. The argument against that point of view comes from those who fear an inflation which, they believe, will accompany any larger scale of investments. The second criticism of the subject of investments is based on the different amounts devoted to the various purposes. During the entire decade 1949-1958 almost one-third of the annual amount of investment went to housing. The gov-

TABLE I—GROSS NATIONAL INCOME, GROSS AND FIXED CAPITAL FORMATION AND ANNUAL POPULATION GROWTH
GREECE: 1949-1957
(In constant prices of 1954)

Year	G.N.I. in Millions of Drachmas	Percent Annual Increase	Gross Capital Formation in Millions of Drachmas	Rate over G.N.I.	Fixed Assets Formation in Millions of Drachmas	Rate over G.N.I.	Percent Annual Population Increase
1949.....	39,170	....	8,382	21.40 ^a	5,888	15.00	*
1950.....	38,673	-1.70	10,081	26.00 ^a	8,186	21.10	1.11
1951.....	43,035	11.30	9,502	22.00 ^a	6,884	16.00	1.06
1952.....	42,412	-1.40	7,333	17.30	6,615	15.60	1.13
1953.....	48,283	13.80	8,137	16.80	6,560	13.60	1.08
1954.....	49,906	2.75	7,745	15.30 ^a	8,035	16.00 ^a	0.97
1955.....	53,442	7.10	9,400	17.60	8,653	16.00	0.91
1956.....	57,460	5.00	11,592	20.20	10,420	18.30	0.82
1957 ¹	62,950	9.50	11,300	18.00	8,600	13.70	*

Source: *Statistical Year Book of Greece*, 1956, p. 247. *Statistical Year Book of Greece*, 1957, pp. 289, 293.

¹ The percent increase announced by the Director of the Bank of Greece in his formal annual speech in May 1958, (9.5 percent over 1956 levels) has been used for the 1957 figure.

² The extremely high percentages of these years have been due to large sums of American aid and war reparations.

³ The fixed assets formation is greater than the gross-capital formation in that year owing to a significant decrease of public stocks during the year (approximately 753 million drachmas).

ernmental economic planners are keenly aware of the fact and would like to change significantly the proportion but the majority of these investments are of private capital. They consider housing as a safer investment than industry. During the last two years the government made an additional effort to direct this capital to industrial development. Through a substantial increase of bank interest rates they have succeeded in increasing the bank deposits from 151 million drachmas in 1946 to about 12 billion drachmas in 1958.⁵

Availability of Electric Power

The second factor which reveals the seeds of further growth for Greece is the recent increase in electric power. The changes achieved during the last decade could be described as the most dramatic part of the Greek scene. The amount of power generated in 1956 was 4.5 times more than the power generated in 1938. In per capita utilization, the increase is also significant. In 1956 there were 155 kw-hr for each Greek compared to 50 kw-hr in 1938; although the per capita rate is still far below that of Belgium, a country of smaller size. Electric power development is still not even half completed. In the final stages of construction are installations for more than 287,500 kw capacity.⁶ Of them, 75,000 kw are in Athens' metropolitan area and 212,500 in provincial Greece. Still another large generator of 125,000 kw was recently allocated to a French concern and scheduled to be installed in Ptolemais.⁷ All the above generators will bring the total installed capacity to a level just over 800,000 kw as soon as they are

completed during the next four years.⁸ The difference between the present situation and the conditions that prevailed ten years ago is extreme. Then there existed only small generators, isolated and dependent on fuel from abroad. Their capacities were limited and the price of the electric power excessive and varied. Only in the capital was there enough and suitable power for industries. By 1956 almost the entire country was served by a grid of high tension lines. These lines feed at present more than seven hundred towns and villages. About 150 of these urban centers had electricity before and almost none of the future six hundred towns and villages to be connected have an electric power installation now. The power is generated by large hydro-electric and thermoelectric plants utilizing local lignite. The price cut in some towns reaches four-fifths of the original price. A corporation, the Greek Public Power Corporation (G.P.P.C.), organized somewhat along the lines of Tennessee Valley Authority, has full responsibility for developing the power potentialities of the country.

The further development of power in Greece, along with some multi-purpose projects, will depend on governmental policies and mainly on the wisdom and competence of the leading personnel of the G.P.P.C. The total power capacity of Greece, based on the known deposits in fuel and water resources, is estimated by many authorities as considerably above two million kilowatts.⁹ Only a mere be-

⁵ The Acheloos River project is not included here. It has a total potential of 300,000 kilowatts. This project was under actual design in 1958 but its construction depends on the installation of a large aluminum plant in the vicinity which will utilize the power and the rich deposits of bauxite in the area.

⁶ There are numerous publications and articles on the subject. Perhaps the best reference in hydro-resources is, *Industrial Potentialities and Electric Power Policy in Greece, 1945*, Aetos A. E., by P. T. Koubelis. It is already in some respects obsolete but includes many of the potential hydro-resources of Greece. Meanwhile the engineering estimations increase constantly the total (hydro and thermo) potential.

⁷ *Statistical Year Book of Greece, 1957*, p. 323, and *Greek Industrial Review*, October 1958 (Athens), p. 53.

⁸ See, Royal Greek Embassy, *The Economy of Greece*, Washington 8, D. C., 1956, p. 15; also, Announcements by the chairman of the Greek Public Power Company, made March 17, 1958, and reported in *Technica Chronika*, 151-152, pp. 37, 38.

⁹ *The New York Times*, November 25, 1958.

ginning has been made. Meanwhile the benefits of these developments are multifarious. The availability of power in almost every corner of the country, the stability of power production and the low, uniform price of power brought results which began to be evident within a few years after the first part of the system was completed. Thus, the total industrial consumption of power (delivered by the G.P.P.C.) increased from 55.7 to 65.0 percent of the total produced power between 1955 and 1958.¹⁰ The spatial distribution of power was improved also. In 1953 only 13.5 percent of the total power production was absorbed in provincial Greece. In 1956 the percentage was 21.6. In 1958, according to G.P.P.C reports, the provinces absorbed 14.0 percent more power than in 1957.¹¹

¹⁰ For 1955, from *Statistical Year Book of Greece, 1956*, p.192. The data for 1958 from the announcement by the Chairman of Greek Public Power Company, made March 17, 1958, and reported in *Technica Chronica*, April 1958, 151-152, pp. 37, 38.

¹¹ *Statistical Year Book of Greece, 1957*, p. 227, and announcement by Greek Public Power Company, made March 20, 1958, and appearing in *Technica Chronica*, April, 1958, 151-152, p. 38.

Components of Gross National Income

The third recent significant and promising change in the Greek economy is found in the relationships and relative importance of several key components of the G.N.I.

A quick glance at the percent contribution of each branch of the economy to the G.N.I. will establish the fact that Greece is still an agricultural country. As late as 1956 one-third of the G.N.I. was contributed by a combination of agriculture, livestock, forestry, and fishing. Industry was the second item with only 19.0 percent contribution to the G.N.I. Trade, with only an 11.0 percent contribution, was the third component in importance. But a second glance at the pertinent data through a number of years establishes another equally important fact: the percentage contributions of agriculture to G.N.I. has dropped more than 10 percent between 1939 and 1956, and about two percent between 1949 and 1956. This change occurred when the production of agriculture more than doubled in quantity (see Table II). The

TABLE II—SELECTED AGRICULTURAL PRODUCTS AND FISHING, GREECE: 1935-1958

YEAR	ANNUAL PRODUCTION IN METRIC TONS				
	Wheat	Cotton	Tobacco	Potatoes	Fishing
1935-1938 Average.....	768,000	44,000	61,000	148,000	30,000
1948.....	800,000	35,000	37,000	319,000	*
1949.....	839,000	48,000	46,000	394,000	*
1950.....	850,000	79,000	58,000	347,000	55,000
1951.....	930,000	89,000	63,000	412,000	45,000
1952.....	1,050,000	77,000	42,000	453,000	43,000
1953.....	1,400,000	95,000	61,000	445,000	52,000
1954.....	1,219,000	128,000	67,000	442,000	60,000
1955.....	1,337,000	189,000	97,000	422,000	60,010
1956.....	1,245,000	154,000	82,000	456,000	59,106
1957.....	1,730,000	*	*	*	70,651
1958 ¹	1,700,000	*	*	*	80,314

Source: *Statistical Yearbook of Greece, 1957*.

¹ From announcements to newspapers and technical magazines. *Tahydromos*, June 7, 1958, and *Technica Chronica*, 157-158, July 1958, p. 22 and February 1959, p. 71.

* Not available.

increase in wheat alone (most important agricultural product in Greece and probably representative of the overall trends) between 1938 and 1958 is 220 percent. If fishing is taken as the measurement the increase again between 1938 and 1957 is approximately 236 percent.¹² The percentage changes noted above has come about only through greater relative increases in the contribution of the other components of the G.N.I.

The first and perhaps the most important change is found in manufacturing. Between 1939 and 1956 there was a gain in contribution by manufacturing of 6.83 percent and between 1949 and 1956 a gain of 1.25 percent. This has happened during a period of general increase of almost all components of the G.N.I. Furthermore, the year 1956 was a year of stagnation for Greek industries. The index of industrial production (see Table III) rose only 2.5 points between

was true also of mining, in which there was a more than 300 per cent increase between 1949 and 1956, and in utilities where there was an overall increase of one hundred percent between 1949 and 1956.

The last significant change in the components of the G.N.I. is the item of outside resources. That item represents income primarily from emigrated Greeks' remittances, remittances from sailors of the Greek merchant marine, income from tourists, and capital movement. The net gains from these sources between 1949 and 1956 are equal to approximately 400 percent, having the record increase among all components of the G.N.I. The statistics for 1957, although not yet final, and the data for 1958, also not final (Summer 1959), present the same pictures. The trends continue in a similar direction, rather accelerated.¹³

TABLE III—INDEXES OF INDUSTRIAL PRODUCTION IN GREECE
1939 = base year = 100

Year	Index	Year	Index
1939.....	100	1953	141
1947.....	67	1954	172
1948.....	73	1955	183
1949.....	88	1956	185.5
1950.....	110	1957	205
1951.....	125	1958	234
1952.....	124	1959	...

Source: *Statistical Year Book of Greece, 1957*, p. 221; also *Industrial Review*, October 1958, p. 53 and *Technica Chronica*, February 1959, pp. 71-92.

1955 and 1956 as against twenty points between 1956 and 1957 or thirty points between 1957 and 1958. Manufacturing and industrial development in general advanced at a very rapid pace in Greece during the last decade. This

¹² *Statistical Year Book of Greece, 1957*, pp. 164, 191. The data for 1958 are not final; they have been taken from newspaper announcements in, *Telydromes*, June 7, 1958, and comments in *Technica Chronica*, 157-185, July 1958, p. 22.

Economic-Demographic Analysis

The correlation of the population of Greece and its economy is also rather significant. According to data in the national census of 1951 the total economically active population of Greece is only 37.20 percent. The remaining 62.80 percent of the population is economically non-productive due to age, sickness, social beliefs or lack of any sort of employment. Unfortunately, there are no data to establish trends with respect to the chronic unemployment or only semi-employment—which has dominated Greece for decades. The only fact which could be found is that about 26.67 percent of the non-active population is within the age of 15-65 and constitutes in turn approximately 42 percent of the total population in the productive age of 15-65.

¹³ See *Technica Chronica*, 161-166, November 1958, p. 45.

If a rapid analysis is attempted of that 58 percent of the total potential productive people of Greece (or in other terms of the 37.20 percent of the total population of Greece) according to their economic orientation, it will be found for instance that 48.10 percent of the total active population was occupied with agriculture and produced only 34.35 percent of the G.N.I.; that 16.75 percent of the total active population was occupied in manufacturing, power and mining, and produced 20.40 percent of the G.N.I.; and finally, that 19.85 percent of the total active population was occupied in various institutional services and produced only 15.65 percent of the G.N.I.

The proportion of the population devoted to agriculture and manufacturing is particularly significant. From the data given it is evident that Greece has not yet reached the stage of development which, according to Colin Clark and A. G. B. Fisher, could be described as the second stage of development.¹⁴ The

economy depended heavily on activities classified as primary (agriculture, mining, fishing, hunting, livestock, etc.). There are strong trends in the country for developing "secondary" and "tertiary" industries but as yet their size is rather small. Only manufacturing is rapidly developing and, if the trends continue as at present, the country will have a considerable amount of "secondary" industries in the coming decade.

Generally, in spite of the progress experienced in agriculture and industries recently, the picture of Greece, as presented by the data of the 1951 census, is yet overshadowed. The cultivatable land in 1950 was only 19.2 percent of the total land of Greece. That land ought to support 49.8 percent of the total population of the country and keep 48.10 percent of the total active population busy. The tragedy indicated by these figures is evident when it is estimated that there are less than nine acres per rural family, with an average of 4.7 persons per family. The extent of the overpopulation in agriculture in Greece is easily shown through a comparison

¹⁴ Colin Clark, *The Conditions of Economic Progress* (London, England: MacMillan and Co., Ltd., 1951), pp. 395-396. See especially Chapters V and IX. Also A. G. B. Fisher, "The Economic Implications of Material Progress," *International Labor Review*, July 1935, pp. 5-18.

TABLE IV—ECONOMICALLY ACTIVE POPULATION GREECE, UNITED STATES, BELGIUM: 1950 and 1951

Items	Greece		United States Percent	Belgium Percent
	Absolute Number	Percent		
Total.....	2,839,481	100.0	100.0	100.0
Agriculture, Forestry, Fishing.....	1,367,271	48.1	12.2	12.1
Mining.....	13,623	0.5	1.6	5.5
Manufacturing.....	450,424	16.0	26.8	37.7
Construction.....	74,959	2.6	6.2	5.6
Utilities.....	11,212	0.4	1.3	*
Banking and Commerce.....	219,903	7.7	18.5	13.4
Transportation and Communication.....	138,025	4.8	7.0	7.0
Services.....	387,622	13.7	23.7	9.9
Others.....	176,442	6.2	2.7	8.8

Source: *Statistical Year Book of Greece, 1957*, pp. 364, 365, International Tables.

* Not Available.

with the United States. Each agricultural worker in Greece cultivates only one-thirtieth as much land as does each farmer even in the agriculturally densely populated state of Georgia in the United States.¹⁵

The situation remains almost static despite demographical processes working to relieve the problem. Indeed, the size of families is becoming constantly smaller. In 1920 the average household in the country was 4.29 persons; by 1940 it was 4.25 and by 1951, 4.11 persons.¹⁶ The rural families are, of course, larger but although no data is now available to establish trends, the difference shown in the 1951 census (4.7 persons per rural household) is indicative. Nevertheless, the demographic improvements are counter-balanced by the effect of the introduction and wide use of every agricultural tool and machinery known in the western world. Very impressive is the data for the tractors. From 1361 tractors in 1939 and only 3,230 in 1945, the number increased to more than 13,757 tractors in 1956.¹⁷ That brought the average area per tractor to approximately 450 acres, or 60 days of work, even if no other device were used for land cultivation. Thus, although the new and abundant agricultural machinery helped in many ways to increase yields and arable land, it helped also to intensify further the chronic rural unemployment.

The average annual income per capita in Greece for 1954 was \$187.00. In the rural areas that figure was not higher than \$50.00.¹⁸ From 1954 to 1956 the above per capita income figures increased approximately 16 percent. A similar increase between 1956 and 1958 is antici-

pated as a result of the general trends of the country's economy. Indeed, in 1958 the average income per capita for the entire country is estimated as somewhere in the vicinity of \$280.00 and \$290.00, assuming a gross national income in the vicinity of 69,000 and 70,000 million drachmas in constant prices of 1954. But it is true that statistics in Greece were never very accurate, least of all for income per capita, its components and distribution.¹⁹ The distribution of income is widely varied between the different groups of people. Indicative of the situation is the estimation presented by a leading economist of the country (see Table V) which presents the bewildering differentiation in income for 1947. Since

TABLE V—DISTRIBUTION OF INCOME PER FAMILY
GREECE: 1947

Number of Families	Percent of Total Number of Families	Maximum Annual Income
1,053.....	0.05	\$6,400.00
2,894.....	0.25	2,400.00
7,316.....	0.40	1,350.00
33,247.....	1.90	780.00
71,951.....	4.10	470.00
287,805.....	16.40	240.00
675,157.....	38.40	160.00
675,633.....	38.50	70.00

Source: E. Evelpides, in *New Encyclopedia, Ilios*, Athens, Greece, 1951, p. 1444.

that time little has been done to improve the situation. A more or less similar pattern of distribution continues today.

Concluding, it is safe to write that the Greek economy has made great strides forward during the last decade. The momentum of constant development is increasing. The country is entering at last the industrial age which had been reached by the western countries over a century ago. But the Greek economy is

¹⁵ See, *Statistical Year Book of Greece, 1957*, pp. 362-365, International Tables; also, *United States Agricultural Census, 1946*, vol. on "Georgia."

¹⁶ W. McNeill, *op. cit.*, p. 210.

¹⁷ *Statistical Year Book of Greece, 1957*, p. 183.

¹⁸ *Statistical Year Book of Greece, 1957*, p. 389, International Tables.

¹⁹ The National Statistical Service was established in 1954. Previously a small statistical department in the Ministry of Coordination had been covering a part of the needs.

still a weak plant with weaker roots. There will be need of constant and rapid development during the next two decades if the nation is going to acquire a place of its own in the family of modern nations. Developments in agriculture, including increase in productivity, in cultivatable land, and decrease of number of rural-farm people are imminent. Industrial development, including more power, more manufacturing and more chemicals and metallurgy, is vital for Greece if the country is to provide employment for her people. Increased and continuous high rate of capital formation in water resources, in manufacturing, in agriculture, mining, fishing and tourism is imperative and an absolute necessity for any realization of present hopes. To supplement all the above, the institutional development and modernization must proceed with an equally rapid rate of growth.

The observer cannot fail but note that the country seems to be moving in the right direction, at present at least. There are large irrigation works and power

projects in Thessaly and Macedonia. There are large industrial concerns recently inaugurated, such as the nickel industry in Larymna, the refinery in Attica, the shipyard outside of Athens; there are other large basic industries ready to start actual construction, such as the nitrogen fertilizer plant in Ptolemais, Macedonia. There are proposals for a steel mill for 300,000 tons of pig iron and plans are almost ready for aluminum production as soon as sufficient capital can be secured.

Foreign capital investments increased eight times between 1951 and 1958, sailors' and emigrants' remittances more than tripled in the same time period and the tourist income increased nine times over that in 1951. By 1958 the "invisible income" is expected to reach \$340 million. If a major disturbance (like war or revolution or other major disaster) does not appear for a decade or so, the Greek can certainly look forward to a better life for himself and his children.

Reports and Comments

Farm Plot Consolidation in Spain

SPANISH agriculture is old and reflects conditions and policies long since past. While no detailed description is available, some of its characteristics in terms of age are clearly evident even to the casual observer. The influence of the Medieval two- and three-field system, for instance, can be seen by anyone who flies to Madrid from the north. Every village seems to exemplify the ancient distribution of crops. Even more pronounced in some areas is the clear demarcation of very small, narrow plots on which farming operations are based. The average farmer in Spain lives in a small village and, especially in central and northwestern Spain, has his land scattered in many plots in various directions. According to data from the incomplete Spanish 1945 Cadastre (census) there were, in that year, 74,130,000 acres of farm land divided in 19,000,000 plots, an average of 3.9 acres per plot. Six plots were owned by the average owner.

In some provinces the situation was extreme. One man owned 49.42 acres, distributed over 256 plots with an average acreage per plot of 0.193. Another man owned 44.48 acres, distributed over 202 plots with an average of 0.22 acres per plot. In the province of Burgos, one farmer had 95 plots of 0.96 acres each, for a total of 91.43 acres. The most extreme general situation existed in Galicia.

Authenticated reports have been made of plots so small that a man cannot turn his oxcart around without entering onto his neighbor's land! One single village has four "farms" of less than four by six feet. An olive tree is owned by seven families. And a farm is so small that the rent is four kernels of corn every year. These examples are extreme but they are not exceptional, and they illustrate the situation.

Time and money is lost in going from one plot to the other. As an example of these costs, it is of interest to mention a study carried out by M. Dumont, a French agri-

cultural engineer, in the vicinity of Sante Marie-sur-Fessard. Some plots with vines were one and one-half miles from the village. To attend to these plots required ten trips a year. The total distance of thirty miles required ten hours, while the effective work needed on the vines was only fifteen hours. An estimate of the time lost in similar situations in Spain at average earnings gives us a cost of Pts. 4,000 million (\$100 million).

Operations on each of these small plots cannot be as efficient as on larger plots. The small plots make virtually impossible the use of much of our modern machinery. The prevalence of manual labor methods in Spanish agriculture can be laid in good part to this situation. It is impossible to maintain adequate soil conservation measures, such as contour farming, strip cropping, etc., in such small plots. This is made worse by the fact that in most sloping terrains the division of the land is always done in the direction of the slope. The land is better at the bottom of the hill; and every heir wants some of it.

The amount of land wasted in boundaries increases considerably in divided plots. The percentage loss in a plot of 62 acres is estimated at 0.32. For 25 plots of 2.5 acres each, the waste is 1.61 percent. For 250 plots of 0.25 acres each, it is 5.09 percent. Disputes and lawsuits are much more prevalent in areas of extensive parceling. It is said that the number of lawsuits between neighbors is in direct proportion to the length of the boundaries.

The basic cause of this extreme parceling is that the sons of a family stay on the land and each one wants his share of land. To give each his fair share of each type of soil, each plot may be divided. The result, over a period of many centuries, clearly becomes serious. The importance of this inheritance factor can perhaps be best illustrated by the situation in the provinces such as Aragon and Catalonia, where the law had been that of the mayorazgo (inheritance of land by the

eldest son) and where the problem of excessive parceling has not appeared in serious proportions. Basic to this extreme parceling, of course, is the fact that there has been a relatively slow industrialization process in Spain. Nor has there been any extensive movement in recent years to the new countries of the world. In consequence, where there are several sons in a family, they frequently, by necessity, have had to depend on their father's occupation and holdings for a living.

The importance of the problem has been stressed for many years. Fermin Caballero, a Spanish economist of the nineteenth century, comments as follows: "You may introduce in our agriculture all the methods of good machinery and cultivation developed by experimental science. You may institute rural credit laws and create rural banks. You may teach and train as far as possible the rural population. To all these considerations you may add a succession of excellent crops. I assure you, however, that nothing permanent and firm has been done in favor of the rural population, as long as the land continues to be excessively fragmented."

While these difficulties have been well-known, most governments in the past have done nothing about the matter. If they attempted to do anything about land, it was always an attempt to parcel out the large estates of the South. A program which is promoted by the present government, the National Colonization Institute, has established around 40,000 small farmers on these large estates. Since 1950, however, the present government has also attempted to do something about the excessive fragmentation problem. Naturally, it has had to proceed slowly and carefully. The first step was to create a Land Consolidation service (December 20, 1952). To date it has started projects on a total of 2,860,000 acres and has finished work on 379,550 acres. The International Cooperation Administration first appropriated 25 million Pts., then 39 million additional, and lately another 50 million. The program is now being carried on at a rate of 120,000 acres a year.

The cost of the program, without reference to complementary work, is put at \$11 per acre. However, much improvement is undertaken, partly as necessary steps for consolidation and partly as inducement. These complementary works include small roads, irrigation ditches, small bridges, etc., and

have an approximate cost of \$70 per acre.

The accompanying maps illustrate very well the problem and the program of correction. They show the situation in the lands of the zone of Cantalapiedra in Salamanca Province before and after the consolidation. It is the first zone where land consolidation was completed. Beforehand there were 5,581 parcels of 2.8 acres each, divided among 330 proprietors. The average ownership included 16.9 parcels. After the consolidation the 330 proprietors gathered their land into a total of 474 parcels, or 1.4 parcels per owner. Beforehand there had been a total of 2,625 enclaves, parcels completely separated from other parcels of an owner by intervening properties. Afterward there were only 13 such enclaves.

The accompanying maps show the situation as to parcels before and after. In addition, the situation as to two owners is shown in detail. (The originals from which these maps were taken were in color, and in black and white it is not practical to differentiate between the green and red used for each of these owners). The three non-contiguous properties to the right of the village shown in Figure 2 and totaling 804 acres were made up out of 332 parcels. The property shown on the left of the village and totaling 371 acres originally was made up of 124 parcels. The possible improvement in farming methods and productivity is patent. The senior author visited this area and found the proprietors were very happy with the change.

The procedure by which consolidation is brought about is necessarily involved and slow. The steps may be outlined as follows:

- (1) A petition for consolidation is presented representing at least sixty percent of the owners and sixty percent of the land.
- (2) A preliminary report is published.
- (3) The proposal is approved by the Land Consolidation Service.
- (4) Owners study the proposal.
- (5) Property not to be included in the consolidation is determined.
- (6) Land is classified and evaluated.
- (7) Interested parties present their views.
- (8) Formal agreement presented by the Local Commission of the Land Consolidation Service.
- (9) Appeals presented to the Local Commission.
- (10) Decision made by Local Commission as to these appeals.



FIGURE 1—LAND OWNERSHIP PARCELS AT
CANTALAPIEDRA BEFORE CONSOLIDATION



FIGURE 2—LAND OWNERSHIP PARCELS AT
CANTALAPEDRA AFTER CONSOLIDATION

- (11) Appeals made to the highest authority (Ministry of Agriculture).
- (12) Final decision of the Ministry of Agriculture.

The most difficult phase of the program is education of the people in each community. Moreover, it is continuous. The Land Consolidation Service presents its arguments by every means. It must arouse interest, explain, and justify. Each step must be understood by everyone. The individual owners referred to above are fairly large owners and so are more apt to have the background to understand and have the financial means to undertake change. This type of situation must be sought out. By means of brochures, articles, talks, visits, movies, etc., support is drawn to the program. It is interesting to note some of the arguments used. A general who divided his troops into small bodies could not defeat a concentrated enemy troop. A library with its books scattered far and wide would not be helpful.

To the farm management man the potential of these changes in terms of greater productivity and lower cost are obvious. Other aspects, however, are less clear but should be at least mentioned. It is obvious that the consolidation of holdings will encourage the use of mechanical power and equipment. It will also reduce the need for manual labor. Is the economic development in Spain or in this particular area such as to offer alternative employment? One can visualize some use of such labor in the continuing consolidation program but eventually new occupational employment must be opened.

Another important management opportunity with consolidation lies in the use of new crop programs and practices. Such changes lie not only in the size of plot but also in the independence offered each pro-

prietor. In the past the intermixture of parcels was such as most surely to prevent change or experiment because of custom and the impracticalness of one man changing without others doing the same. Will the agriculturalists involved rise to this new opportunity?

Will fractionalization be resumed? Might the law of the *mayorazgo* be extended? Are there other legal means to prevent excessive division? The large estates of the South indicate that the problem is not simply one of preventing division. It would seem that some thoroughgoing studies and imaginative thinking along this line would be desirable. Might the old tendency toward fractionalization be counterbalanced by the onrush of modern mechanization and the lure of the cities, as apparently is the case in much of the United States?

Can the program proceed until the problem, as a large-scale, national one, is solved? Continuous success in each successive consolidation venture will do much to assure continuation but, even so, will the national will and the support of the land owners continue to be forthcoming? In the specific ownership cases cited, the owners had considerable property which might alone have done much to make success possible. Where many, very small owners dominate a community, might they be too lethargic to support such a change? For the time being, however, real progress appears to be underway. The ultimate end may be watched for with great interest.

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Assessment Automation†

Editor's Note. Among those who reviewed this short paper one expert in the taxation field commented that he was skeptical that value can ever be divorced so much from human judgment but agreed that mechanical aids can be of real help. The method proposed here is a novel one and it is hoped the publication of this paper will stimulate further discussion of current experiments in this field.

† The author is indebted to Dr. A. M. Mood for his courtesy in permitting him to examine his personal papers on the subject.

IN the large cities of our country, the assessor corps are far too small to adequately handle the large number of parcels which they must appraise. This state of affairs can be alleviated through automation. By use of mathematical modelling and large-scale electronic computing equipment, assessors can be freed from much of the drudge work which they are now forced to do and can thus turn their attention to the more complex aspects of their work. The community will

then receive the benefit of a much more efficient assessment system yet have the same size assessor corps; the only additional expenditure being the cost of the mathematical model and the data processing equipment. In other words, assessment automation would pay for itself.

Among the factors considered in arriving at an estimate of property worth for taxation are type of property, market prices of similar properties in the same area, specific location of the property, age of the property, improvements on the property, quality of construction, etc. The influence of each of these factors in arriving at a tax valuation is a matter decided upon by the individual assessor. However, there must be some consistency among assessors regarding the relative influences of these factors. For if this were not the case we would have anarchy in the assessor's office.

Two identical houses in the same condition in the middle of the same block should to all intents and purposes have the same assessed value. This points to the basic fact regarding real estate values in the same general area: namely, that they are highly correlated (i.e., related). Thus, if we account for the difference in construction, difference in specific location regarding corners, thoroughfares, and neighboring structures, difference in improvements, difference in size, etc., then real estate values in the same general area must be the same. This makes the problem amenable to analytic methods, for it is now clear that there must be prepared (1) a listing of all the variables or factors which affect real estate value; and (2) construction of a scheme which gives the proper weights to the factors in any given situation and arrives at "fair" property value.

We agree that there are a large number of factors to be considered, that various "quirks" are produced by certain combinations of factors, that each parcel has its own individual characteristics, etc. However, modern electronic computers permit us to utilize a mathematical model of a high order of complexity which is capable of dealing with a myriad number of "peculiarities," handle large volumes of data for comparisons and checks, and still manage to come up with answers quickly.

The variables influencing real estate values are known and any competent "real estate" analyst could make a comprehensive list

within a short period of time. What remains somewhat of a mystery are the relative weights attached to these variables in a given situation by the assessors. However, there is a record of the assessments that have been made in the past and this is a gold mine of information. For by the use of compensation factors, statistical curve-fitting procedures, etc., we will be able to arrive at the relative weights from the past data. In other words, by first constructing a mathematical model of the situation (specifying the variables to be considered and their relationships to each other), and then finding numerical values for them, the results arrived at by the assessors in the past can be matched as closely as desired. This means discovery of the relative weights. If the latter seem appropriate (to the assessors and public officials), then they can be continued. If not, then they can be changed to more suitable values. In this manner, a mathematical representation of the assessing process can be constructed.

The general approach outlined above is not new or unique. It has been successfully applied in many private enterprise and government situations which had formerly been considered non-quantitative. For example, twenty years ago inventory control was a manual "seat-of-the-trousers" operation in most large firms. Today there are only a handful of large scale enterprises which do not utilize a mathematical-model-electronic computer approach to inventory control. Quantitative methods could do equally well in the field of real estate.

The data needed for the mathematical model would be obtained by questionnaire and from public records, then the data and the model would be fed into large-scale electronic computing equipment and, as output of the procedure, we would receive quick, fair and thorough assessments.

Basically the value of every piece of property would be adjusted—corresponding to changes in factors which influence property value. Among such factors would be last sale price, date of last sale, location, type of construction, type of property, size of property, age of property, price differentials of properties sold during the past year in the same area, etc. Another concept that would be incorporated into such a general scheme is that of "reference value points." Various specific locations in the city can be carefully evaluated and, based upon a parcel's loca-

tion relative to these "reference points," a base value for it can be arrived at (i.e., value of the location). This figure then must be adjusted to take cognizance of the parcel's special characteristics.

Once the system is set up, the ideas described above could be handled without human intervention by automatic data processing equipment. In its memory the equipment would store past assessments, new data from the questionnaires, adjustment formulas, data on real estate transactions, building permits, public improvements, etc. Then by means of the master program (i.e., model) the machine would grind out assessments and tax statements each year. The assessors, who will have been relieved of much of the "dog-work" that they were formerly required to do, will be able to spend their time checking special cases, sharpening the model, and seeing that the system functions smoothly.

To summarize, assessment automation offers the following advantages: (a) objectivity of approach, (b) accuracy of operation, (c) economy of operation, (d) documentation of assessment changes, (e) substantiation of assessment changes, and (f) gradual appreciation of property values. A computer must be unbiased, thereby insuring objectivity. The

machine is less liable to error than humans, thus making for accuracy. All assessment changes can be explained in terms of changes in one or other of the factors affecting property values, and thus changes are fully documented and substantiated. With the use of high-speed computing equipment, complete assessments can be made yearly. Therefore, appreciation or depreciation of property can be immediately reflected in the tax bill. This would make certain that the effects of a prolonged gain or loss in real estate value would be felt gradually. Recently, in several western cities taxpayers received a jolt as assessments suddenly took note of the sharp rise in land values over the last ten years.

"Fairness" in assessment implies various kinds of allowances for special considerations, and therefore requires quite elaborate and involved formulations. The large-scale modern electronic computer allows us to utilize highly complex mathematical models which will consider all significant factors. It is thus possible to provide the community with a quick, thorough, fair, economical, and efficient tax assessment program.

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An Italian Farm and Family: 1934 and 1955

FOR a thousand years the Mira farm, located in the foothills of the Alps, north of Padua on the Piave River, has been in the same family. At the time of the 1934 survey¹ it was part of a large property belonging to the family of the Counts of Collalto. The property had been in this family since 958 A.D. At the time of the author's visit in 1955, however, it had been sold. The Director-General told us that the owners had been afraid of reform and this had led them to make the sale back in 1939.

Since the Collalto holding is of more than passing interest a brief description of it is in order. Most of the 2,700 hectares (one hectare being approximately 2.47 acres) are operated by 190 *mazzadri*, or share tenants. The principal products are wine, cheese and

silk. About half of the area is hilly and the other half rather level plains. In the plains area 1,150 hectares are irrigable. The tenants average 10 hectares in the hills and 14 in the plains area. The vineyards require much hand labor and are largely in the hills while the general farming is in the plains area. The crops grown include maize, sorghum, tobacco, potatoes, wheat, oats, barley and alfalfa. There is a large winery on the property which produces around 30,000 quintals of wine per year. Excess milk beyond that needed by the families goes to the cheese factory while the tobacco raised by the tenants is cured in the tobacco plant. Silk production has gone down considerably over the years and the textile mill has little to do.

In addition to the 190 families of the *mazzadri*, there are 270 permanent employees, technicians, administrators and salaried workers, as well as 300 casual and seasonal workers.

¹ See, "Coloni Mezzadri della Marca Trevigiana," *Monografie di famiglie agricole* Number X (Rome, Italy: Istituto Nazionale di Economia Agraria, 1935) pp. 93-152.

This large holding was in the front lines of the Austrian-Italian fighting in World War I and scarcely any of the more than 200 edifices remained standing when the war was over. In the administrative office one wall is covered with snapshots of several hundred houses destroyed in the war, while on the opposite wall are photographs of the rebuilt houses. There is also in this room a bust of the Count who did the rebuilding but who is no longer living.

Size and Land Use

Mira farm had not changed in size in the 21 years since the first study, in 1934. It contains now as then, slightly over 23 hectares. About $2\frac{1}{2}$ hectares, however, are in the Piave river bottom and unusable, while another 1.7 hectares are taken up with the farm house and yard, and other waste land. The productive surface is therefore only slightly over 19 hectares (47 acres). About the same crops are grown on the place but there have been changes in the proportions of the farm devoted to each. The cultivated crops are wheat, corn, alfalfa and clover, and potatoes and vegetables. The acreage of wheat has been increased by half a hectare, while that devoted to hay increased from 5 hectares in 1933 to 6 in 1955. The corn area remained practically the same but there was a slight increase in that of potatoes and vegetables.

The increase in these crops represents a reduction in the area devoted to vines and mulberry trees, particularly the latter. It is still common practice in north Italy to plant rows of trees and have vines planted between the trees in the same row; that is, the trees provide support for the vines and at the same time are productive in themselves. Productivity of mulberry trees used in this manner was very great indeed when silkworm culture was at its most profitable height. But since 1933 the silk industry has fallen remarkably and is presently but of minor importance. The family reports that 600 kilograms of cocoons were produced in 1936 but only 300 in 1955. Also the price now is much lower, which no doubt accounts for the lower production. In the earlier period the Fascist government was attempting to revive the industry by a guaranteed price policy.

Landlord and Tenant

The *mezzadro* system likewise has changed, but little in the two decades. The relation

between landlord and tenant is established by law. The agricultural year begins November 11 and ends November 10 the following year. Until 1948 the tenant (*mezzadro*) and landlord shared 50-50 in the production of the farm. After 1948 the tenant received 53 percent. The tenant furnishes his own minor implements, such as shovels, hoes, etc. The landlord furnishes the larger implements, such as plows and harrows, but the tenant looks after their maintenance and repair. No mention was made of a tractor in the 1933 report but in 1955 there was a tractor on the farm. This belonged to the landlord. For the tractor the tenant paid a cash rent to the landlord of 4,000 lire per hectare which was considered to be one-half the cost of plowing one hectare. The plow and other attachments for the tractor were included in this cost. This rental seems very high in terms of U.S. costs.

In the *mezzadro* system there are many variations with reference to livestock. The standard arrangement is for the landlord to furnish the livestock and to share equally with the tenant in what they refer to as the "product of the stall." That is, the income from the sale of milk or milk products, the sale of veal, etc. is shared equally. Unfortunately the original monograph does not indicate the number of livestock of various kinds in 1934 but did report that 11.42 percent of sales from the farm was from this source. It is also typical of contracts that certain prerequisites are provided the tenant. He may raise two or three hogs for family use, as well as poultry and rabbits. He is also entitled to a piece of land for a family garden.

Expenses are shared equally. Tree products beyond that used by the family are shared. The landlord, however, pays the total cost of stakes and wire for the vineyard for the planting of new trees and vines. The tenant furnishes the labor.

The livestock on the farm as of 1955 were as follows: cows 6, calves 12, oxen 2, horses 2, colts 2, hogs 3, poultry 100.

The Family Then and Now

In January 1934 the family consisted of 29 persons, grouped in four "stems" (*ceppi*) as follows:

Name	Age
(1) Stem	
Giovanni, Head	70
Teresa, Wife	65

Giuseppe, son.....	41	third son listed in 1934, is now head of the family. The composition is as follows:
Dionisio, son.....	39	
Mosé, son.....	37	
Pietro, son.....	27	
Raffaele, son.....	22	
Angela, daughter.....	32	
Natalina, daughter.....	26	

(2) Stem

Giovanna, wife of Giuseppe.....	41
Teresa, daughter.....	12
Ferricir, son.....	7
Elsa, daughter.....	5
Emilia, daughter.....	4
Luigi, son.....	1

(3) Stem

Maria, wife of Dionisio.....	37
Mario, son.....	12
Gildo, son.....	11
Regina, daughter.....	9
Aldo, son.....	8
Mira, daughter.....	6
Lino, son.....	3
Zita, daughter.....	1½

(4) Stem

Maria, wife of Mose.....	33
Silvio, son.....	10
Tarcisio, son.....	9
Evaristo, son.....	6
Egidio, son.....	3
Vilma, daughter.....	1

All 29 of them lived under the same roof in a large 3-storey house, and ate their meals at the same table. All the children of Giovanni, head of the house, were born on this farm, which means that all the children of the three married sons were also born on this farm. Their wives were daughters of farmers in the same area. Two other sons are married but do not live on the farm.

This "extended" family pattern is common throughout northern Italy. Le Play calls it the "stem" family. Patriarchal in organization, in that authority resides in the oldest male, even the married sons living away from the paternal home depend on the father for advice and making important decisions.

The wife of the head supervised the household work in which the daughters-in-law participated. The women looked after the poultry and hogs. Giuseppe had primary responsibility for the other livestock.

The household in June 1955, consisted of 20 persons grouped in 3 "stems." Mosé, the

(1) Stem

	Age
Mosé, head.....	58
Maria, his wife.....	54
Silvio, son.....	31
Tarcisio, son.....	30
Evaristo, son.....	27
Egidio, son.....	24
Vilma, daughter.....	22
Elvinia, daughter.....	20
Giorgio, son.....	18
Virginia, daughter.....	16
Elia, daughter.....	13
Elena, daughter.....	8

(2) Stem

	Age
Luigia, wife of Silvio.....	—
Luciano, son.....	5
Lorio, son.....	4
Leirano, son.....	2
Lauretta, daughter.....	1

(3) Stem

	Age
Carmela, wife of Tarcisio.....	—
Romeo, son.....	1
Angela, sister of Mosé.....	53

Five children were born to Mose and Maria after the 1934 study was made. Angela, 32 years of age in 1934, never married and so remains a part of the Mira household.

Patterns Then and Now

Foods typical of this area in 1934 were corn meal, cheese, milk for children, salame, vegetable soup, beans, eggs and, of course, bread and olive oil. Corn meal (*polenta*) was reported for every meal. On Sundays and holidays there would be meat, either chicken, rabbit, or beef.

In 1955, the Mira farm family gave the following as their usual diet: breakfast: milk, bread, corn meal, coffee, salame, cheese. For lunch: cheese, vegetables (beans, potatoes), eggs, meat (3 times a week), wine, fruit (apples). For dinner: beans, vegetables, salame, grapes or cheese, corn meal, bread.

Diet has not changed much over this period of time. The most important change seems to be the decline in the relative importance of corn meal. While it is still important today, it could hardly be said of present conditions

that, "the dietary regime is prevalently founded on corn meal," as was said in 1934.²

Most of the food is grown on the farm now as formerly. Rice, coffee, sugar, salt, and olive oil have to be purchased at the store but the basic foods are home-grown.

The 1934 report continually refers to the Mira family as a *community*. This is an apt characterization from at least two points of view. First of all, the family is large enough to constitute at least a small neighborhood. Secondly, the members live *communally*; that is, they live under the same roof, eat at the same table, and share the labor and the returns of the farm and home. This is as true in 1955 as in 1934. Twice yearly the respective family (stem) quarters are redecorated (whitewashed) and three times yearly the kitchen-dining room is refurbished.

The educational level is the same in 1955 as in 1934. All of the adults have had elementary schooling, and all children of school age attend. Elementary school consists of 5 grades, and is located one kilometer from this farm. A secondary school is available at a distance of 4 kilometers. None of the members, up to 1955, had attended it.

The families are Roman Catholic in religious affiliation and attend church regularly. Recreational life has changed somewhat. In the earlier years—during the Libyan War—the family had no radio, and could listen to it only on Sunday at the center. In 1934 it was reported that none of the members went to the cinema because they were too far away from it: in 1955 the young people were going every Sunday. The family head in 1934 had been on the farm for 53 years but five generations had occupied farms of Colalto. The present family represents the sixth.

The story of this family emphasizes the rigidity of farm family life in Italy. The farms remain the same from one generation to the next. Once the land is subdivided, there seems to be no likelihood of changing the size of a farm by consolidating it with an adjoining piece. The land use pattern changes little, not only because certain crops and livestock combinations have been found

suited to soil, climate, and market, but also because the persistence of a high man-land ratio. The pattern of intensive cultivation must be maintained. Thus, on this 50-acre farm with 25 head of livestock, there are the father and five grown sons; his wife and the wives of the two married sons, and four grown daughters. Such a labor force would be adequate for a 400-acre farm in a mixed farming area in the United States. Yet, the Mira family appears to be making a living and as far as an outsider could judge, sharing in a generous "psychic" income in the enjoyment of each other and of their neighbors. In short, it is impossible to apply criteria of economic well-being, as used in the United States, to the situation of north Italy.

This inflexibility and apparent changelessness in rural Italy may not persist. The gradual introduction of tractor power—seen on the Mira farm, for example—must result in disturbing the equilibrium of the old order. It replaces human labor because it displaces oxen. It creates cash expense paid for its rental and for gas and oil to operate it. It creates ever expanding wants for other machines and attachments. Above all, it requires more land for its economical operation. Any increase in farm size would mean replacement of existing farmsteads and farm families. While it may be economically desirable, it certainly is at present politically impractical. The industrialization of non-agricultural Italy will need to advance much further than it has done to absorb the huge surplus of rural population which would be released by any general mechanization of agriculture. As one Italian economist put it bluntly to this writer, "we would need to kill off a lot of people before mechanization of agriculture would be possible." The magnitude of the surplus may be indicated by the fact that Italy with more than 48 million people is about the size of the combined areas of the states of Georgia and Florida, which have less than 8 million population.

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² *Op. cit.* p. 42.

Population Densities and Real Property Values in a Metropolitan Area

THIS STUDY reports the correlations found between population densities and real property values in a specific Standard Metropolitan Area, that of Honolulu, Hawaii, in 1957-1958. Population densities were estimated both by place of work and place of residence. Average values were computed separately for land and improvements, as well as for the two combined. Findings were expressed as zero-order, partial, and multiple correlation coefficients, using census tracts as the units of analysis.

Although the relationship between densities and real property values has long been recognized, empirical research into this association has usually been limited in both scope and method. Most authorities have stressed the importance of population growth and distribution in determining land values.¹ Exact mathematical measurement of this relationship, unfortunately, is rarely found in the literature.

A prime reason for this paucity of quantitative research has been the long-standing lack of comparable statistics on a small-area basis. Although standard, relatively permanent statistical areas (known as census tracts) have existed in many American cities for a generation or longer, their use has been limited for the most part to place-of-residence population data compiled every ten years by the United States Bureau of the Census. Place-of-work population estimates by census tract are a much more recent development, available as yet for only a few communities.² Property value statistics compiled by census tracts are likewise difficult to find. Even where the required economic and demographic data are potentially available on a comparable small-area basis, they may be limited to the central city of a large metropolitan area.

Current statistics of the types listed above are now obtainable for every census tract in the Honolulu Standard Metropolitan Area. The following published series were included in the present study: (1) Number of employed household heads, by census tract of employment, as of January 1958. This series was based on a sample of 2,500 households residing in the Honolulu Standard Metropolitan Area, surveyed by the *Honolulu Star Bulletin* and Honolulu Redevelopment Agency.³ (2) Number of households, by census tract of residence, as of April 1957. The Honolulu Redevelopment Agency took a special census of close-in areas during the spring and summer of 1957, and supplemented these findings with estimates based on symptomatic data for outlying tracts.⁴ (3) Assessed value of land, improvements, and land and improvements combined, by census tract, as of January 1958. These statistics were compiled by the Territorial Department of the Tax Commissioner.⁵

Although wide individual deviations from the legal seventy-percent assessment ratio have been pointed out,⁶ assessed values seem to provide a reasonably accurate index of area-by-area variations in market values in Hawaii. A study of 1957 sales data reported that the mean ratio of assessed to market value for the entire Island of Oahu (that is, the Honolulu Standard Metropolitan Area) was 47.5 percent, and among the nine tax zones ranged from a low of 39.8 percent to a high of 55.3 percent.⁷ The five series outlined above were then recomputed on a per

¹ Honolulu Redevelopment Agency, "Honolulu Household and Housing Survey, 1958," *Redevelopment and Housing Research*, No. 12, April 1958, pp. 1-20.

² Honolulu Redevelopment Agency, "Household Estimates for Oahu Census Tracts, 1957," *Redevelopment and Housing Research*, No. 10, October 1957, pp. 26-32.

³ Honolulu Redevelopment Agency, "Assessed Valuations of Oahu Census Tracts, 1958," *Redevelopment and Housing Research*, No. 14, December 1958, pp. 4-12. For a description of assessing methods employed, see the Department of the Tax Commissioner, *Appraisal Manual for Assessors and Appraisers of Real Property*, Effective January 1, 1956.

⁴ John J. Hulten, *Report to the Mayor and Board of Supervisors of the City and County of Honolulu, Territory of Hawaii, Relating to Real Property Assessments in the City and County of Honolulu* (Honolulu: Board of Supervisors, July 15, 1958).

⁵ Public Administration Service, *Real Property Assessment in Hawaii, A Survey Report* (Chicago, Illinois: Public Administration Service, December 1, 1958), p. 89.

¹ See, for example, Paul F. Wendt, "Theory of Urban Land Values," *Land Economics*, August 1957, pp. 228-240; "Economic Growth and Urban Land Values," *The Appraisal Journal*, July 1958, pp. 427-443; and Otis Dudley Duncan, "Population Distribution and Community Structure," *Cold Spring Harbor Symposia on Quantitative Biology*, XXII, 1957, pp. 357-371.

² See, for example, Robert C. Schmitt, "Estimating Daytime Populations," *Journal of the American Institute of Planners*, Spring 1956, pp. 83-85; the U. S. Bureau of the Census, *Population Estimates for Survival Planning* (Washington, D. C. U. S. Department of Commerce, July 1956).

acre basis, using planimeter estimates of the land area of each of the forty-two census tracts in the Standard Metropolitan Area.⁸

Great differences were evident from tract to tract. Households per acre, by tract of residence, ranged from 0.02 in one of the outlying agricultural areas to 15.54 near the central business district. By place of work, densities ranged from 0.01 (in three different

outlying tracts) to 46.65 downtown. Assessed value of land and improvements combined was likewise lowest (\$214 per acre) in a peripheral agricultural area and highest (\$357,340) in the central business district. Comparable tract-by-tract differences were evident when value data were compiled separately by land and improvements. These ranges are summarized in Table I.

Correlation analysis—simple, partial and multiple—revealed the extent of the association between population densities and real

⁸ Honolulu Redevelopment Agency, "Assessed Valuations of Oahu Census Tracts, 1958," *op. cit.*, and "Population Densities on Oahu: 1920 to 1950," *Honolulu Redevelopment Research*, No. 5, March 12, 1954, table 3.

TABLE I—POPULATION AND ASSESSED VALUE PER ACRE, FOR THE HONOLULU STANDARD METROPOLITAN AREA AND LOWEST AND HIGHEST CENSUS TRACTS: 1957-1958

Area	Household Heads Per Acre, by Place of —		Assessed Value Per Acre		
	Work	Residence	Total	Land	Improve.
Honolulu S.M.A.....	0.24	0.27	\$ 4,536	\$ 2,227	\$ 2,310
Lowest Census Tract.....	0.01	0.02	214	186	28
Highest Census Tract.....	46.65	15.54	357,340	192,853	164,487

property values. Complete data appear in Table II. In interpreting these correlations, it should be remembered that they were based on only forty-two sets of observations, few of which approached an approximately rectilinear distribution. Even so, the resulting coefficients appear to give a generally accurate indication of the degree of association among the several variables.

Zero-order correlations were relatively high between property values and place-of-work data. The coefficient (r) between density by tract of employment and assessed value per acre of land and improvements combined was 0.87, with a corresponding coefficient of determination (r^2) of 0.75. Values were only slightly lower when land and improvements were considered separately.

Household densities by place of residence revealed a much lower degree of correlation with property values. Between households per acre and assessed value of land and improvements combined, r was 0.49 and r^2 was 0.24. These values did not differ appreciably from those computed separately for land and improvements.

Partial correlations were considerably higher than zero-order coefficients. Between

total assessed value and density by place of work, the coefficient of partial correlation (holding density by place of residence constant) was 0.94. Between total assessed value and density by place of residence (with density by place of work kept constant) the coefficient was 0.79. Values for land and improvements computed separately were slightly lower.

Together, the two measures of population density provided an almost complete statistical explanation of tract-by-tract variations in property values. The coefficient of multiple correlation between total assessed value per acre (the dependent variable) and density by place of work and place of residence (the two independent variables) was 0.953. The combined measures of density thus accounted for almost ninety-one percent of the statistical variation in property values. Corresponding correlations for land and improvements computed separately were respectively 0.937 and 0.943.

The foregoing correlation coefficients appear high even when allowance is made for the limited number of degrees of freedom (39 or 40), skewed distributions of the under-

TABLE II—COEFFICIENTS OF CORRELATION AND DETERMINATION BETWEEN ASSESSED VALUE PER ACRE OF LAND AND IMPROVEMENTS AND POPULATION DENSITY BY PLACE OF WORK AND PLACE OF RESIDENCE, FOR OAHU CENSUS TRACTS: 1957-1958

(All Values are Positive)

Dependent Variable: Assessed Value Per Acre of—	Independent Variable: Household Heads Per Acre By—				
	Place of Work		Place of Residence		Places of Work and Residence (multiple)
	Zero-order	Partial ¹	Zero-order	Partial ²	
Coefficient of Correlation:					
Land and Buildings.....	.868	.937	.494	.792	.953
Land Only ³.....	.849	.916	.494	.750	.937
Buildings Only ³.....	.862	.925	.482	.755	.943
Coefficient of Determination:					
Land and Buildings.....	.753	.878	.244	.628	.908
Land Only ³.....	.721	.839	.244	.562	.878
Buildings Only ³.....	.743	.856	.233	.570	.889

¹ Household density by place of residence held constant. Between place of work and place of residence densities, $r = .119$ and $r^2 = .014$.

² Household density by place of work held constant.

³ Between land and building values per acre, $r = .946$ and $r^2 = .895$.

lying data, and rough nature of the economic and demographic estimates used. Unfortunately, it is impossible to establish the overall effect of these difficulties on the computed correlations. It seems unlikely, however, that the higher values reported in Table II would thereby be reduced to levels of doubtful significance.

These correlations merely indicate degree of association, of course, and do not necessarily imply a cause-effect relationship. Whether population densities create real property values or result from them (or both) in a given situation cannot be learned from this kind of analysis. In any event, certain tentative findings emerge from this study. Among them are the following: (1) In met-

ropolitan Honolulu, at least, there is a high degree of correlation between the two measures of population density, taken together, and real property values. (2) Viewed separately, the two types of density differ widely in their association with property values. Density by place of work is much more highly correlated with assessed value per acre than is density by place of residence. (3) Assessed values of land and improvements, computed separately, show only slightly lower correlations with population densities than is the case with land and improvements combined.

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Service on Limited-Access Highways: Organized Pressures and the Public Interest: A Quaere

MILTON C. TAYLOR'S stimulating article, "Service on Limited-Access Highways: Organized Pressures and the Public Interest," recently published in this journal,¹

¹ *Land Economics*, February 1959, pp. 24-34.

raises the question, "whether it is good public policy to follow the present intention of denying services on the right-of-way" of the forthcoming net of limited-access highways, and in particular the new 41,000-mile Interstate

and Defense Highway System.² As the article points out, service facilities will be universally barred from the Interstate System right-of-way and a similar policy is being followed on much of the various state trunk system limited-access roads.

Professor Taylor suggests that it is not good public policy to do so. However, there is danger in Professor Taylor's position in that it may result in the conversion of the Interstate System from roads of a freeway type to roads of a controlled-access type.

The concept of limited-access roads includes both freeways and controlled-access roads.³ A controlled-access road is one to which access is restricted both in number and location but still continues in this modified form. Such a road is Wis. 30 which runs from the outskirts of the Milwaukee metropolitan area to Madison. A controlled-access road is built under specific statutory authorization to serve a less heavily travelled trunk route.⁴ A freeway, on the other hand, is a road completely isolated from the abutting land—either by being built on new location in which case the abutting owner has no right of access to the road⁵ or it is created by converting a pre-existing road and condemning or purchasing the landowner's right of access.⁶ Such a road is Interstate 94, replacing U. S. 41, running from the Illinois state line to Milwaukee. This type of road is built under different statutory authorization.⁷ The Interstate roads will be of the freeway type, which is intended to serve very heavily travelled and inter-regional routes. It would appear that Professor Taylor is questioning the freeway-services concept since services will be available on the controlled-access road in the traditional fashion under somewhat restricted number and location requirements. The importance of this distinction will become clear in the following discussion.

Professor Taylor suggests that the underlying policy motivating the decision to ex-

clude service facilities from the Interstate System is not clear. This is true in the Congressional enactment of the standards for the System. However, the policy motivating the decision by the United States Bureau of Public Roads to seek such exclusion seems to be safety, speed, and economy of travel as well as the protection of the highway system from roadside encroachments that would destroy the System's functional utility and efficiency while it is still structurally sound.⁸ What few valid comparative records there are available indicate that, while the controlled-access road not only has a greater fatality rate than the freeway, it also has a slightly greater fatality rate than a conventional road.⁹ In other areas of comparison, however, the controlled-access road has a better record than a conventional road and a less impressive record than a freeway.¹⁰ This is not a brief against controlled-access roads; they have an important place in a well-planned state trunk highway system, particularly on the state's non-interstate roads where costs will be a more important factor.¹¹ These factors are introduced because a freeway with access for service facilities is in danger of becoming a controlled-access road even though the service facilities are of a high design level.

Professor Taylor suggests a number of reasons which tend to indicate that the provision of service facilities on the freeways would be desirable. One of these is the in-

² David R. Levin, *Public Control of Highway Access and Roadside Development* (Washington, D. C., United States Bureau of Public Roads, 1947) pp. 3-6. It is an interesting side-light to observe that the *autobahns* of Europe which served as a stimulus for American thinking on the freeways do not provide service areas on the right-of-way.

³ President's Advisory Committee on a National Highway Program, *A Ten Year National Highway Program* (Washington, D. C., 1955) p. 11.

⁴ E.g., "Built-In Safety," *Automotive Industries*, December 1, 1956, p. 71.

⁵ Federal participation in costs which is 90% federal and 10% state on the Interstate System, drops to 50% federal and 50% state on the federally-aided primary roads. In light of this increased cost burden on the states on the trunk system roads it becomes important to note that some courts have held that a pre-existing conventional road may be converted into a controlled-access road with no damages to the abutting owner's right of access if the access left him is reasonable. *State Highway Commission v. Smith*, 248 Iowa 869, 82 N.W. 2d 755 (1957). Those states which consider the conversion of an existing conventional road to a controlled-access road to be a taking of the abutting owner's right of access under the eminent domain powers will still find his damages to be nominal if the new access to the controlled access road is as good as his prior access. *Department of Public Works v. Wolf*, 414 Ill. 386, 111 N.E. 2d 322 (1953).

⁶ 70 Stat. 378 (1956), 23 U.S.C. 157 (Supp. V, 1958).

⁷ According to the American Association of State Highway Officials, "an expressway is a divided arterial highway for through traffic with full or partial control of access . . ." And an expressway with full control of access is a freeway. See, American Automobile Association, *Roadside Protection* (Washington, D.C., 1951), p. 14; Iowa State Highway Commission, Rules and Regulations Regarding Controlled Access Highways, February 25, 1957.

⁸ Wis. Stat. Sec. 84.25 (1957).

⁹ *Carozzella v. State*, 269 Wis. 593, 71 N.W. 2d 276 (1955).

¹⁰ *Boxberger v. State Highway Commission*, 126 Colo. 526, 251 P. 2d 920 (1952).

¹¹ Wis. Stat. Sec. 84.29 (1957).

crease in the individual driver's average speed that will result from his ability to secure services on the right-of-way rather than leaving the freeway to secure such services. This consideration is not controlling. If the ability to secure services on the right-of-way will lower the speed of the stream of traffic, which the controlled-access studies indicate that it tends to do, then it is better that the individual driver lose time in leaving the right-of-way than that he should slow down the whole flow of traffic in securing them on the right-of-way.

Professor Taylor suggests that by state control of services on the right-of-way the allocation of these services can be made more efficient and economical on an over-all basis by avoiding duplication and poor location and that the state itself should benefit from the otherwise unearned increment or "pure wind-fall" to the owners of land in the interchange areas under the current policy. If these considerations are compelling, they can be achieved by improved service road and interchange location practices or by excess condemnation of the land around interchanges and the establishment by the state of service areas on that land. Where these approaches are not desirable or feasible, local governmental action and control through zoning and master planning can accomplish many of these same ends. Even if the private landowner exploits this benefit, it will be returned to the state to some extent in the increased tax-base of the land involved—and in Wisconsin through the state income tax.

Professor Taylor places emphasis on the failure of the toll road users to leave the right-of-way to secure services. This is not always possible without the payment of added tolls or other inconvenience on re-entry, and drivers alert to this possibility will tend to remain on the toll road right-of-way even when no cost penalty would result from their deviation from the direct toll route. Where these factors are not present the considerations of general convenience would seem to explain the choice of the available services.

Professor Taylor concludes from these factors and others which he ably presents in the article that driver convenience should be the paramount factor in determining service area location. But quære: should not the factors of safe, efficient and economical use of the road and the permanence of the investment of the public money in the inter-regional

highway system be paramount? Where the provision of such services on the highway right-of-way tends to defeat these objectives, the comparatively minor driver inconveniences of leaving the freeway for services should not be controlling.

That such lack of service facilities on the right-of-way will not tend to decrease the usefulness of the freeways to the individual driver is indicated by the records of the existing non-toll freeways. Excluding essentially urban roads, such as New York City's West Side Drive which must be treated separately, many of the county expressway systems present somewhat extended stretches of freeway design roads in suburban and rural non-farm areas, e.g., Cook County's 15-mile Edens Expressway in Illinois. This road seems to have resulted in no substantial driver inconvenience. Further, U.S. 66 in Illinois from Joliet to Springfield, before conversion to interstate standards, presented an extended length of freeway type road with service facilities available only via service roads and in the interchange areas. Again, no significant driver inconvenience seems to have resulted. Road studies on these and similar facilities in different areas where there is no alternative to seeking services in other than the right-of-way should be included in the extensive toll road studies called for by Professor Taylor.

A final difficulty involved in providing service facilities on the right-of-way is a constitutional problem. The current federal statutory and administrative regulations could well be changed but an underlying constitutional issue would remain. Should such services be classified as a *public use* under the terms of the state constitutional restrictions on the power of eminent domain and will the method of providing them violate the *equal protection* and *due process* clauses of these instruments by granting such rights on an otherwise restricted right-of-way? There is no clear answer and the result may differ from state to state. The toll road legal experience¹² is not applicable because the toll roads are quasi-private corporations run for profit¹³, at least until the financing bonds are repaid, making them somewhat analogous

¹² *Illinois State Toll Highway Commission v. Edens Cemetery Association*, 111 Ill. 2d, 158 N.E. 2d 766 (1959); *Opinion of the Justices* 330 Mass. 713, 113 N.E. 2d 452 (1953).

¹³ *People ex rel. Thompson v. Giessel*, 265 Wis. 185, 60 N.W. 2d 873 (1953).

to railroads or other public utilities that have the power of eminent domain delegated to them by the state. On the contrary, the freeways will be ordinary, free public roads of a very high design standard. The point is raised only to note the possible issue involved in many of the states.

The principal danger to the highway system resulting from Professor Taylor's position is that it may result in the conversion of the interstate freeways into merely controlled-access roads with a corresponding decrease in their safety, efficiency, speed and permanence. The toll road data on which Professor Taylor bases his conclusion is susceptible to other interpretation and, since it does not include information on the existing non-toll freeways, may not be valid. The desirable ends that the author proposes to achieve can be reached within the existing framework by state or local action within the freeway design. Finally, there is the possibility of an underlying constitutional issue.

Driver convenience is important and should be provided wherever possible. But the maximum in driver convenience is the conventional road where the driver can secure not only the traditional roadside driver-services but also have access to a local shopping and amusement district.¹⁴ It must be remembered that the main function of the Interstate System and the state trunk freeways is to provide traffic service. The most effective means of providing this is through full freeway design.

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¹⁴ Andreas Grotewald and Lois Grotewald, "Commercial Development of Highways in Urbanized Regions: A Case Study," *Land Economics*, August 1958, pp. 236-241. The authors were describing highway U. S. 41 in Northern Illinois, built as a through-traffic facility in the 1930's and now replaced as a through-traffic carrier by the Illinois Tri-State Toll Road running several miles to the west and parallel to the old road.

Service on Limited-Access Highways: Organized Pressures and the Public Interest: A Rejoinder

MY general impression after reading Professor Covey's reply to my article, and in referring again to the original paper, is that both of us are guilty to some extent of making oblique and circuitous sallies before getting to the point. I have this reaction because I have apparently presented my thesis with enough ambiguity so that Professor Covey has misunderstood my analysis in part, while I have also had some difficulty in discerning the focal point of his criticisms.

To illustrate, Professor Covey begins his reply by drawing to my attention in a discreet way that I have been using the term "limited-access highway" rather loosely. He is, of course, quite correct in saying that a limited-access highway can be either the controlled-access type, where access is restricted in number and location, or the freeway type, where access is completely denied owners of abutting property. But although I am appreciative for this correction, it serves only to clarify and not to resolve the basic policy issue which I have raised. In other words, what this correction does is to make more apparent that my concern, more accurately stated, is over the provision of services for the freeway type

of highway rather than for the controlled-access type.

Or to mention another digression, Professor Covey maintains that the danger inherent in the provision of services on the right-of-way is that this may result in converting the National System of Interstate and Defense Highways from a freeway type of highway to a controlled-access type. Again, this statement avoids the issue. I admit that it would be a poor bargain to trade the freeway type of highway for the controlled-access type in order to provide user services on the right-of-way, but I had no intention of implying that such a trade would be desirable. Nor is this a necessary alternative. What I have suggested, instead, is the possibility of providing services on the right-of-way without detracting in any way from the freeway feature. And it is my impression that toll highway experience has proven that providing services on the right-of-way in no way impairs the functional utility of the facility.

What, then, is my conception of the principal issue to which both Professor Covey and I should be directing ourselves. Stating my thesis more directly and concisely than I have

done before, I would say that I have tried to present the case for *publicly regulated and supervised service facilities on the right-of-way of the freeways*, particularly on the National System of Interstate and Defense Highways. Lest even this be misunderstood, let me say that I do not see why the highway user of the freeways should be denied the same kind of services which are presently available on the toll highways. Now that this frame of reference has been established, and I hope this time without ambiguity, the remainder of this rejoinder will consider some of the reservations which Professor Covey has expressed with respect to the provision of services on the right-of-way of the freeways.

While the focus of the original article was on arguments justifying the location of service facilities on the right-of-way, Professor Covey counters by suggesting other ways in which services could be provided. He states:

"If these considerations are compelling, they can be achieved by improved service road and interchange location practices or by excess condemnation of the land around interchanges and the establishment by the state of service areas on that land. Where these approaches are not desirable, or feasible, local government action and control through zoning and master planning can accomplish many of these same ends. Even if the private landowner exploits this benefit, it will be returned to the state to some extent in the increased tax-base of the land involved."

In addition to being inconvenient to motorists, providing service facilities off the right-of-way of the highways will also present a number of problems. The first difficulty which will be encountered is with the designing of the interchanges, for these will have to be adequate for highway users forced off the highways to find service facilities as well as for normal egress and ingress traffic. It would appear that the traffic capacity of the interchanges will have to be increased by at least 10 to 15 percent if the rate of traffic movement and safety standards are to be maintained. If this is not done, the interchanges will become traffic bottlenecks and breeding grounds for accidents. In addition, intersection frequency may have to be increased, particularly in states west of the Mississippi.

Nor would the traffic problems end at the interchanges. Travelers seeking services will enter feeder roads, which in many cases will be inadequate even to handle regular origin

and destination traffic. In their quest for services, these drivers will add to the congestion on local roads and cause a safety hazard by looking for parking facilities and in making cross-traffic turns in order to return to the expressway.¹

Initially, it may be taken for granted that service facilities around the intersections and on feeder roads will be inadequate for the demand. At the very least, therefore, there will be a period of painful adjustment for the motorist while private investment provides the kind and amount of facilities needed. Until this adjustment eventuates, service facilities will be on a hit and miss basis. In addition, adequate signing will have to be provided on the right-of-way of the highways in order to inform motorists of the nature of the facilities available at each intersection.

More serious than these problems, however, is the threat of rural blight around the intersections and on nearby feeder roads, which will be a burden forced on local communities. Near most intersections there will be a mad scramble for land and the hasty erection of commercial establishments. These developments are likely to occur before there is adequate zoning, planning, or land use regulation; because local governments either will be unaware of what is happening or will lack the resources to cope with the problem. This creation of urban slums around the intersections will not only create problems of health, sanitation, and policing for rural communities but will also detract from desirable standards of aesthetics and beauty, which is one of the design objectives of the interstate highway system.² (Suggestion: Professor Covey to inspect some of the facilities available for master planning and zoning at the township level in Wisconsin.)

In the absence of adequate local remedial action what else can be done to avoid these problems? Professor Covey mentions excess condemnation of the land around interchanges and the establishment by the state of service areas on that land. If by this, he means the establishment of publicly regulated and supervised service facilities, why not develop these on the right-of-way where

¹ For a more complete development of this problem, see an article by Roland B. Greeley, "Transportation an Essential Part of Any Comprehensive Planning," *Traffic Quarterly*, January 1958, pp. 5-16.

² Acknowledgement is made to Professor Philip M. Raup of the University of Minnesota for some of these thoughts which were made available through a personal letter.

they are more conveniently located for motorists? It is also claimed that higher valuations for the property tax will return some of the benefits of increased land values to the state. With administration of the local property tax as it is, not too much reliance should be placed on this compensatory factor. Further, the beneficiaries of this increase in tax revenue would be local residents instead of highway users. (Suggestion: Professor Covey to refer to Henry George's *Progress and Poverty*.)

Later in his reply Professor Covey argues that the operation of existing non-toll freeways proves that the lack of service facilities on the right-of-way will not decrease the usefulness of these highways. He cites as proof of this New York City's West Side Drive and Cook County's 14 mile Edens Expressway in Illinois. These relatively short stretches of highway, however, are not indicative of the future problem of providing services on freeways. The problem under consideration is not 15 or 20 miles of freeways with abundant service facilities at either end, but 41,000 miles of fully controlled access highways. The problem is not with a traveler who spends one-half an hour on a freeway, but with one who spends a whole day or several days.

Professor Covey raises the possibility of constitutional restrictions with respect to publicly regulated services on the right of way. Again, this objection is in the nature of a digression because it is not directed to the issue of social desirability. Moreover, constitutional restrictions did not prevent the provision of service areas on Route 128, a freeway encircling Boston. It is also pertinent to note that these service areas on Route 128 were built as a result of public demand *after* the highway was in use and despite the fact that the interchanges were at intervals of approximately one mile.

Finally, let me direct myself to a quare that is posed: "Should not the factors of safe, efficient and economical use of the road and the permanence of the investment of public money in the inter-regional highway system be paramount?" In asking this question, Professor Covey, of course, assumes that the provision of highway services on the right of way detracts from full freeway design. This

is apparently the crux of the issue between the two of us for, rather than detracting from freeway design, I would argue that services on the right-of-way actually increase the safety, permanence, and utility of the highways. In fact, the proposition can be defended that an express highway system without adequate provisions for conveniently available services is not really a full integrated system. It seems to me that the availability of meals and fuel on the right-of-way of an express highway is entirely as logical and necessary as the provision of meals in an airplane or sleeping accommodations on a train.

What will be the outcome of this issue? It is possible that the problem will be resolved by the driving public itself. During the past twenty years the highway user has learned to expect certain conveniences from traveling on toll highways such as absolute control of access, safety features of various types, and specialized aids such as service facilities on the right-of-way. What will happen when the highway user finds that not all of these are provided on the freeways? What will happen if he comes to the conclusion that he has been short-changed, at least as far as services are concerned? Public dissatisfaction may be such that a change in policy will be demanded, notwithstanding pressure groups, possible constitutional restrictions, or present legislative and administrative restrictions. The planners, legislators, and administrators responsible for present freeway provisions may discount toll highway experience but they may not be able to ignore the demands of the highway user.³

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³ Since the presentation of my original article on the subject of service facilities on the freeways two papers have been presented by outstanding authorities of highway design which give support to the position that services should be available on the right-of-way of the freeways. I am indebted to these papers for stimulating my own thought on the subject. See, John R. Crosby, "The Interrelation of Agencies in the Control of Traffic," a paper presented at the 29th Annual Safety Council and Exposition, April 14, 1959; and Charles L. Dearing, "Adequacy of Services for the Traveling Public on Controlled Access Highways," a paper presented before the American Society of Engineers' Convention, May 6, 1959. Acknowledgement is also given to Professor Frank Child of Michigan State University for helpful suggestions.

Book Reviews



Real Estate Principles and Practices. By Preston Martin. New York: The Macmillan Company, 1959, pp. 419. \$6.75.

The emphasis of the book is on real estate finance and development and federal housing policy. In treating these subjects Martin has introduced an innovation in the organization of the subject matter by taking the reader through the life-span of a program of land use from subdivision to demolition and redevelopment. Chapters on mortgage money sources, financial practice and the mortgage market are pointed toward financing real estate development and complement the life-span chapters very well. Three chapters on federal activities also are pointed toward development of residential areas and secondary mortgage market problems. Two chapters on residential income properties complete the material focused directly on real estate development and investment.

Other chapters on urban areas and urban growth, property law and conveyancing, real estate brokerage, valuation, blight and cyclical fluctuations are used to complete the book but they almost appear as "extras" to the main stream of the material. Appendices include monthly loan amortization tables, annuity tables and FHA risk-rating grids. Use of the data in the appendices is described in the text so that their inclusion is functional and appropriate.

The book is primarily descriptive as opposed to analytical with the greater part of the treatment on practices rather than principles. Martin's desire to equip a student with the tools for decision-making with respect to real estate situations is apparent but he has not carried his discussions so far as to relieve teachers of the need for supplementing the text material and further identifying principles as guides for action.

Inasmuch as the general theme of the text is on development of real estate it would appear that the subject of urban growth—

chapter two in the book—could have been given more extensive treatment. Here in particular is the book brief and descriptive rather than analytical. The causes of growth, the measurement of growth and the impact of economic expansion on urban areas are described but not dealt with sufficiently to equip the potential developer or investor with the tools to measure the probable rates of change in an urban market or to translate estimates of economic growth into demand and supply factors in real estate markets. A teacher will have the opportunity to supplement the text in this area while the previously uninformed reader who undertakes the book without supervision may remain unappreciative of the analytical opportunities available to him for forecasting and projecting urban growth.

The life-cycle of real estate creation approach gives Martin organizational problems. Much of the book is well organized but some of the chapters and sections of chapters appear out of place, particularly "too late," but this is the result of the use of the life-cycle approach to real estate development and demise in which the need for saying everything at once is emphasized. All introductory books are likely to suffer to some extent from being unable to tell everything at once; mention of it here may be a reflection of the reviewer's prejudices on what must be held until later rather than a flaw in the book.

The style is comfortable though less than academic. The "you will find . . ." approach which Martin uses is not preferred by the reviewer but it does personalize the book to the reader. The use of names of well-known persons, companies, places and real estate situations should be of interest to readers new to the field and contribute to the book's appeal. Minor flaws common to first editions of texts appear but they do not harm the book as a teaching instrument.

The major contributions to textbook literature are in the areas of subdividing and financing in which Martin is fascinatingly realistic. The book could develop widespread acceptance because of the development and financing chapters.

The Martin book will probably be very effective if used in conjunction with case and problem materials in professionally oriented real estate courses.

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Governmental Problems in the Chicago Metropolitan Area. A Report of the North-eastern Illinois Metropolitan Area Local Governmental Services Commission. Leverett S. Lyon, Editor. Chicago, Illinois: The University of Chicago Press, 1957, pp. 283. \$8.00.

The metropolitan problem—that of finding politically acceptable means of organizing, financing, and administering large urban complexes—continues to be the most prominent issue in the field of local public affairs. The present volume is one of numerous publications that have appeared in recent years on the governmental problems of metropolitan areas. It is the joint product of twenty contributors under the editorship of Leverett S. Lyon, executive director of the North-eastern Illinois Metropolitan Area Local Governmental Services Commission. This commission was established by the Illinois legislature in 1955 to study the problem of providing basic local services to the nation's second largest metropolis.

The contributors were asked to prepare expository papers analyzing particular area-wide problems. Their work appears in the form of seventeen monographs covering a wide range of functions and activities—from fire protection and refuse disposal to school reorganization and metropolitan planning.

The volume is impressive but, aside from disclosing certain factual information about the governmental complexities of the Chicago area, it adds little that is new to the expanding literature on metropolitanism. Viewed in its entirety, the collection again suggests that the metropolitan problem is one "arising from differentiated growth and the resulting lack of coincidence between economic development and governmental entity." In outgrowing its political boundaries the urban community now faces the difficult task of operating with many autonomous centers of political decision-making.

The various papers are unevenly written. Some of them are helpful analytically but the majority are useful only as descriptive essays. This latter result was to be anticipated since the monographs were designed primarily to furnish "the basis for an informative program for the members of the Commission, members of the legislature, civic groups, and citizens generally."

The paper written by Frederick T. Ashman with the cooperation of the Chicago Plan Commission staff bears special mention. Showing a perceptive awareness of the metropolitan community as a functional entity it demonstrates how the physical form of the Chicago area influences the character of its development, how each part of the metropolis contributes to the carrying out of major economic activities, and how social and economic interaction leads to the area as a whole many of the characteristics of a single city. Ashman offers no solutions—in fact the contributors were asked to avoid definitive conclusions and recommendations—but he does emphasize the need for conducting area planning and research on a comprehensive rather than the usual functional basis.

Perhaps as studies of this kind accumulate, they will provide the empirical data necessary for theory formulation in the field of metropolitan government. If they serve this purpose they will have accomplished an important mission. For until we obtain a better theoretical understanding of the metropolitan community as a functioning organism, our efforts to solve the conundrum of the metropolis will remain largely ad hoc and ephemeral.

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Techniques of Population Analysis. By George W. Barclay. New York: John Wiley & Sons, Inc., pp. 311.

The jacket, the foreword, and the introduction of *Techniques of Population Analysis* declare its suitability for the novice, and to a large extent this claim is justified. The book comprises a systematic, well-organized series

of discussions of important concepts, definitions, and analytic procedures commonly employed by demographic analysts. Numerous comments on the limitations and biases of particular types of data and particular analytic procedures do much to alert the inexperienced population analyst to the necessity for caution in interpretation of demographic measures. Numerous tabular examples make clear how specific measures are computed.

Readers who lack training in demography may wonder, however, whether the results attained by the modes of analysis so well set forth are important only for their own sake. There is barely a hint of the reasons why specific demographic measures often prove useful in the real world, or of the potential contribution of population studies to economic analysis, national and local planning, governmental administration and policy formulation, and many other fields in which such studies have proved to be of value. A section devoted to topics such as these and to the promulgation of research strategy in keeping with various objectives would have been a valuable addition.

The emphasis given to some topics, particularly the stable population and the intrinsic rate of increase, seems excessive in a work for beginners, whereas insufficient attention is given to the development of suitable assumptions for population projections, guides to the selection of appropriate life tables for particular problems, the interpretation of data for periods of sharp population change (such as during the recent Hungarian revolution), and other practical problems which logically precede the computations stressed in the book. The chapter on manpower fails to discuss the usefulness of employment data collected on an establishment basis in industrial censuses as an adjunct to the social security system and in other ways, and hence avoids consideration of the very important problem of reconciliation of employment data from

different kinds of records. Conspicuously absent is any treatment of such population characteristics as educational attainment and marital status. Also it would have been useful to people working with data for areas with poorly developed statistical systems to have covered the possibilities of drawing useful inferences about demographic variables from non-demographic data.

There are a number of sweeping generalizations in this book which are either incorrect or most questionable. For example, the life table is *not*, as claimed, "indispensable in making population estimates by age." It is often dispensed with in favor of registered deaths by age or estimates thereof, with some improvement in accuracy. Nor is it true that "place-of-birth statistics of a census have potentially the greatest wealth of information about migration that has ever been assembled."

There are a number of annoying editorial or typographical lapses. In at least two instances cross references are incorrect; several formulae are incorrectly printed; in table 7:3 the gross reproduction rate is called the net reproduction rate; a column of figures in the same table is incorrectly totaled; and most confusing of all, the numbering system of the appendix continues that of chapter 4, so that references to the appendix appear to refer to Chapter 4.

Despite its weaknesses, the book has considerable potential usefulness for beginners; particularly suitable are the chapters on the life table and the measurement of fertility. There is a plan to use several chapters in courses operated by the United States Bureau of the Census for foreign trainees in demography.

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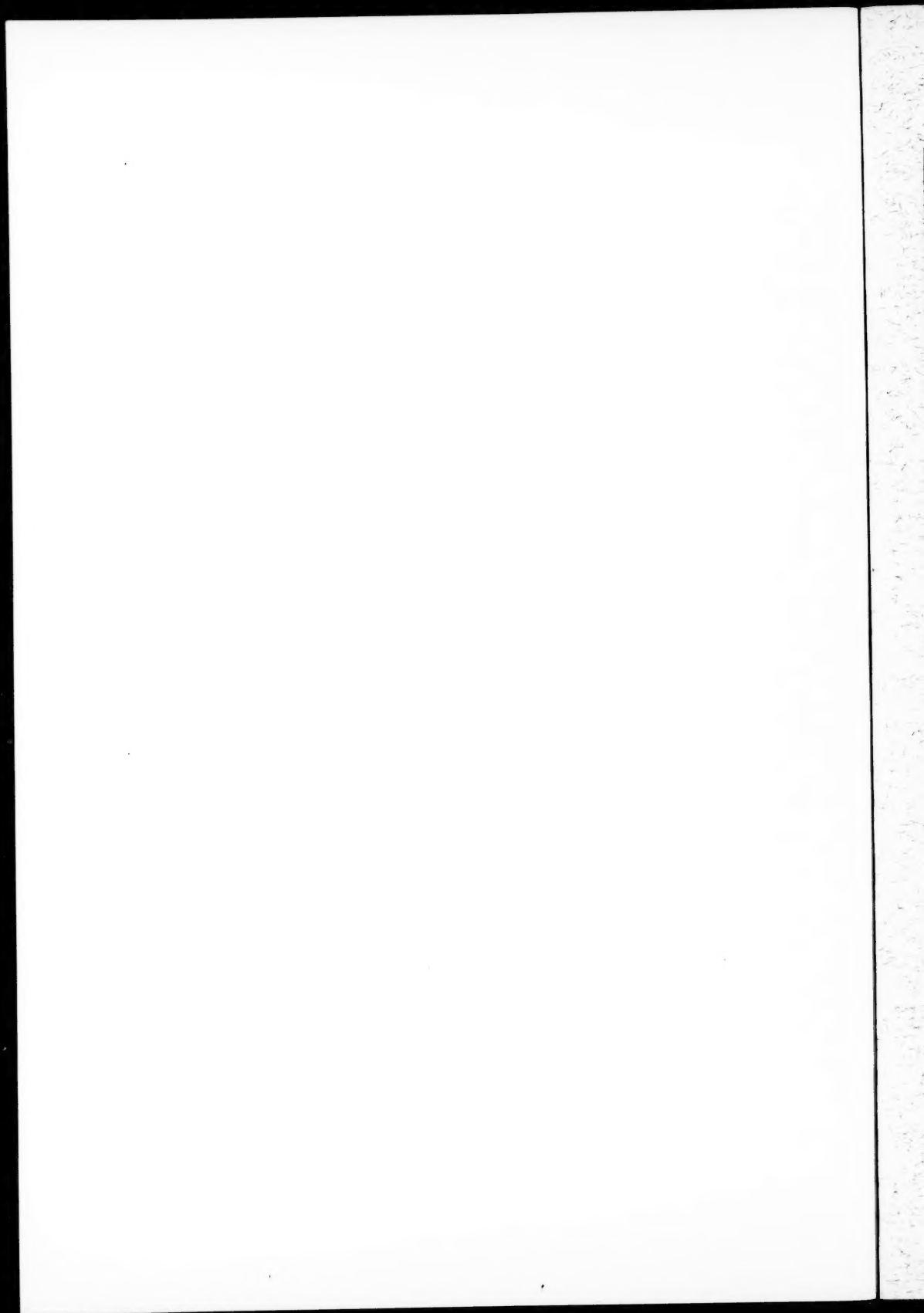
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